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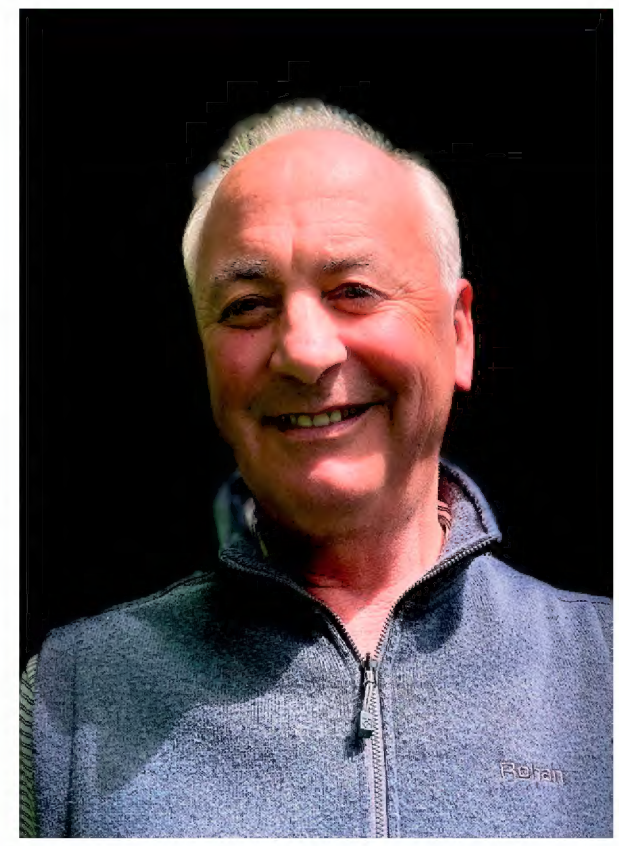
An asterisk * indicates a peer-reviewed paper

Front cover: The ammonite *Procerites (Gracilisphinctes) mirabilis* collected by A. J. Phipps. Ventral view. Oxford University Museum of Natural History specimen number: OUMNH J. 77408. The specimen is 280mm in diameter and wholly septate.

Back cover: YNU botanists discussing identifications during the Excursion to Brockadale.
Photo: Judith Allinson

The Naturalist

Alastair Fitter, President for 2022-2023



I was extraordinarily lucky in my introduction to natural history. My father, Richard Fitter, was one of the leading naturalists of the 20th century, a pioneer of field guides aimed at a non-specialist audience and also a leading light in the conservation movement, working with IUCN, WWF and the Fauna Preservation Society (now Fauna and Flora International) on the world stage, and with a range of organisations, including BTO and the wildlife trusts in the UK. Almost any family journey involved a detour to seek out a rare plant or bird, so I early learned that identification is not as difficult a skill as it can seem (well, for some species anyway!) and that there was interesting wildlife everywhere.

My principal interest then, as now, was in plants and I went on to take a degree in Botany, even then an esoteric topic, having been the only pupil in my school to do Botany at A level. Finding a University that offers a Botany degree would be a challenge now and I don't think that there is an A level in Botany on offer. There is a self-perpetuating cycle here: plants feature poorly in degree courses, so graduates know little about plants and if they become teachers are unable to transmit any enthusiasm for plants . . . and so on. The problem is equally bad for invertebrates - my other enthusiasm is moths - and for many groups of those the number of people who have any proficiency in identification is alarmingly small.

There are plans to introduce a new GCSE programme in Natural History, starting in 2025. This could be a big step forward but I fear it will run up against the same problem: how many teachers have the knowledge or confidence to teach field biology? In many schools, where it is affordable, the field biology section of A-level Biology is taught by taking students on a residential field course, but that option is going to become increasingly difficult for schools as their finances shrink.

It would be a tragedy if GCSE Natural History was a flop because it would be impossible to

resurrect it for many years if that happened. It is imperative that the community of naturalists does everything it can to support this new initiative. I believe that schools need two things: training and support to enable teachers to take on this new GCSE with confidence, and funds for equipment for field teaching, whether that is waterproof clothing or pH meters.

I hope that YNU will take a lead here. We represent the community of naturalists in Yorkshire. I would love to see YNU and Yorkshire Wildlife Trust working together, and with others, to support natural history education in Yorkshire. More broadly I want to see closer links between YWT and YNU. When the YWT was founded in 1946 – as the Yorkshire Naturalists' Trust – all the prime movers were prominent members of YNU, people such as Douglas Hincks, Wentworth Ping and Wilfred Taylor.

Today the two organisations have moved apart, at least in terms of their main players. Yet YWT and YNU share a common goal, which is to understand, protect and enhance nature in Yorkshire. A focus on young people could be the impetus to work together more closely and to ensure that our discipline flourishes.

The population dynamics of two lichenivorous moths: the Common and Muslin Footman

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Introduction

Following the publication of the survey of the distribution of lichenivorous moth caterpillars living in the drystone walls of the Yorkshire Dales (Pearson, 2020a), I was contacted by John Perry, who has been trapping adult moths near Ingleton from 2013. Just as I had found that the caterpillars of the Muslin Footman *Nudaria mundana* were more numerous than the Common Footman *Eilema lurideola*, his results showed that this was also the case for adults for most years. However, he found considerable variation between years and in two years Common Footman were more plentiful than the Muslin Footman (Figure 1, p 163). Although both moths had peaks in their population in 2016 and 2019 the troughs did not always coincide. Are these fluctuations due to chance or is it possible to identify the factors responsible for these variations: perhaps weather or levels of predation?

Lancashire Trapping Records

To investigate this further it was decided to use a larger data set which could provide a longer time span with trapping over several localities. Justine Patton, one of the macro-moth recorders for VC60 (Lancashire), very kindly provided data submitted by numerous individuals operating traps within Lancashire. With such a wealth of information it was decided to select the period 2000 to 2020. Even then there were in excess of 12,000 records of nearly 43,000 adult Common Footman and over 10,000 Muslin Footman moths.

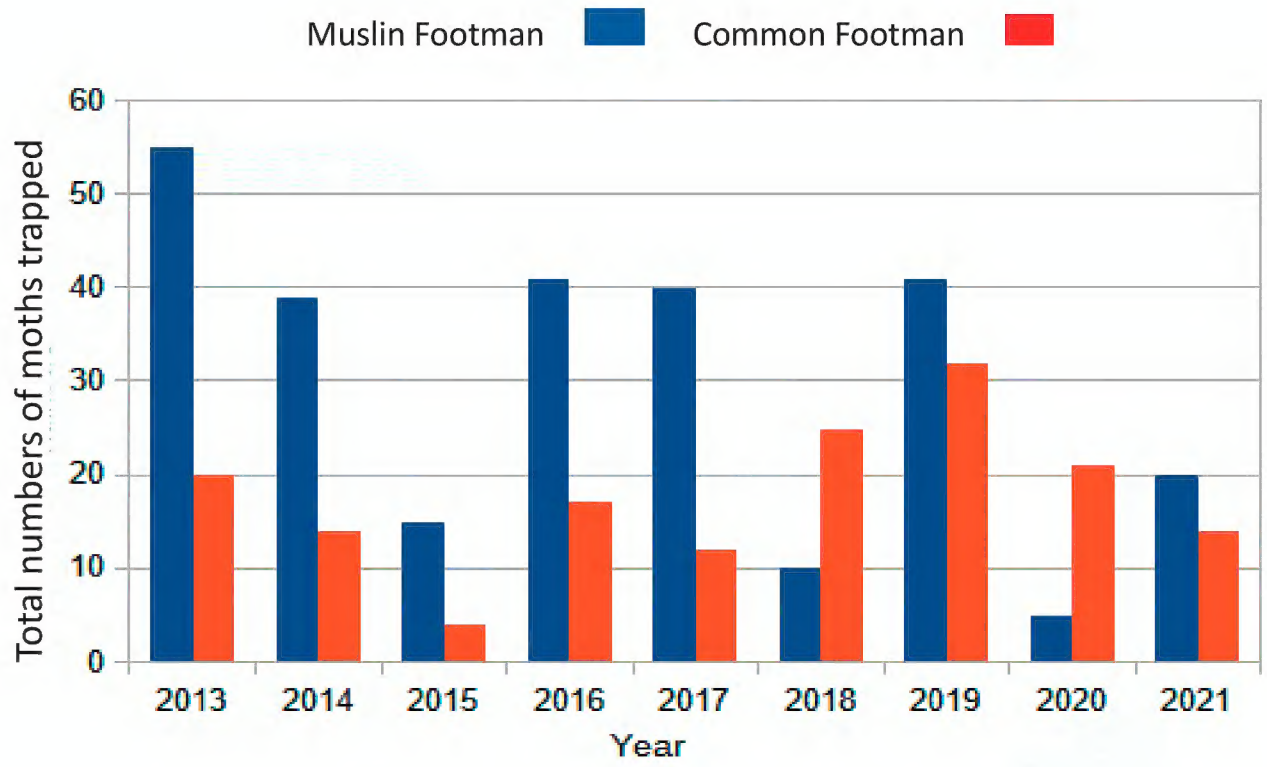

Figure 1. Numbers of Common and Muslin Footman caught per year.

Figure 2 (below) shows the trapping results for the whole of Lancashire. What is immediately apparent is that in every year, unlike with the Yorkshire Dales, the Common Footman is more numerous than the Muslin Footman. During the period there were five peaks in the Common Footman population (2002, 2006, 2010, 2015 and 2020) or between 4 and 5 years apart. There were also five peaks for the Muslin Footman but the time between them was shorter, 3 or 4 years, than those for the Common Footman. The peaks for the two species did not coincide. In other words, these moths never reached a peak in the same year. In the case of the troughs in numbers it was only in 2007 that there was a match for the two.

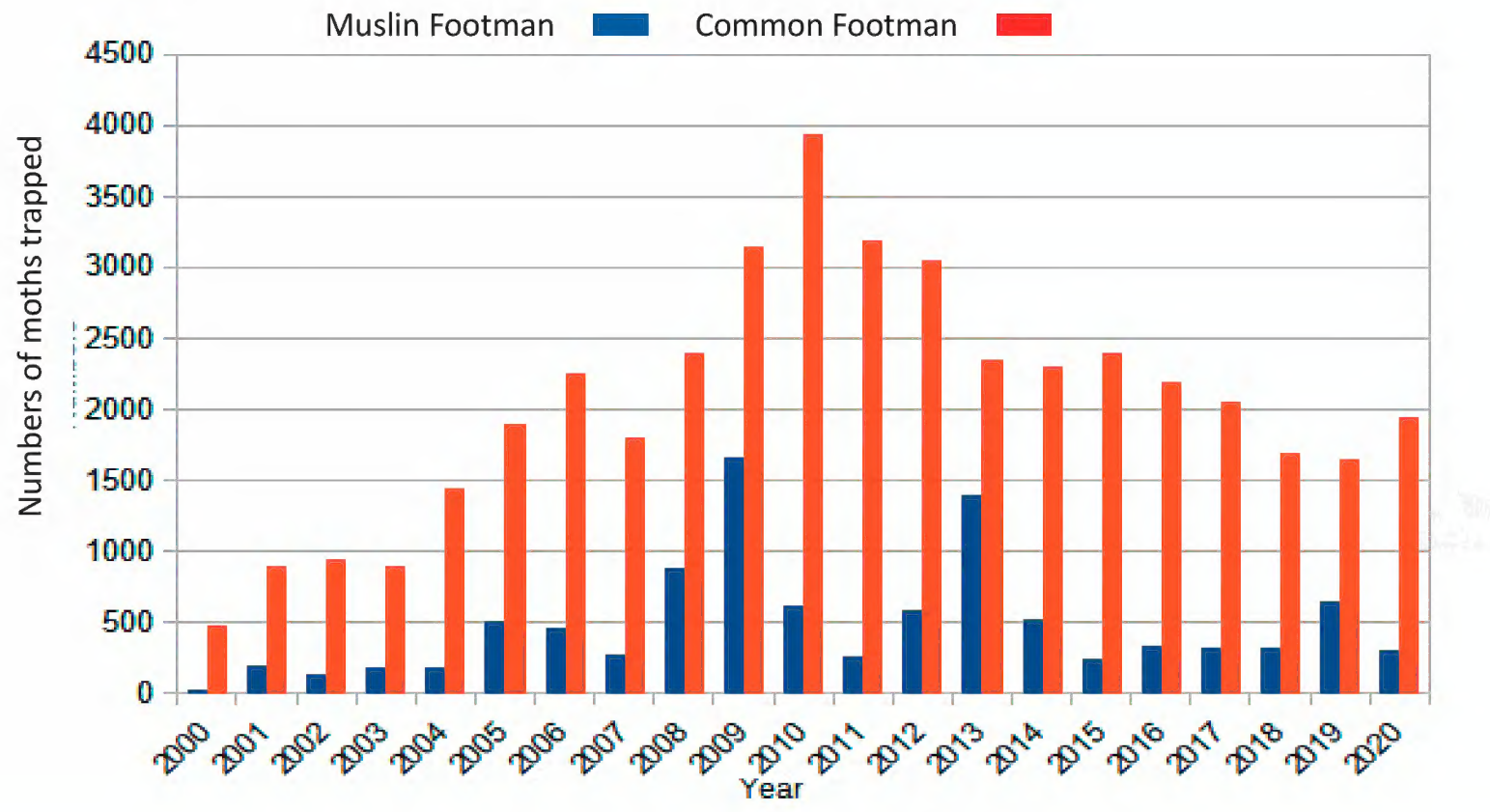

Figure 2. Annual trapping records for Lancashire

There are several possible problems with the interpretation of the Lancashire data. The first assumption is that the number of records were constant throughout the period. It is probable that the number of people trapping varied and that, for example, poor weather during the flight period limited the number of trapping nights. In fact, there was considerable variation in the annual records over the 21-year period. These ranged from 177 in 2000 to over 600 in 2010. This may have been due to an increase in recorder effort, an increase in the number of recorders, or a combination of the two. Figure 3 (below) shows the same data presented in Figure 2 adjusted for the number of records for each year, i.e., the mean catch for each trapping session.

There is little change in the profile of the graph for the Muslin Footman; apart from the two population peaks from 2007 to 2010 and from 2012 to 2014 the population overall appears stable. This is not so for the Common Footman; a new peak appeared in 2017 and the population seems to be on the increase, apart from the decline from 2017 to 2019.

The second issue is that of geographical variation. From the Dales survey it was clear that there were considerable geographical variations in the number of caterpillars. If there were differences in the abundance in adult numbers in different areas this would be obscured in the amalgamated county population. There would then be a 'smoothing' effect on the graph due to local variations in the populations of both moths. In order to investigate this further, three areas were selected where trapping had been undertaken consistently over a number of years (14 to 20): Dolphinholme (2004-18), Leighton (2001-19) and Yealand (2001-20). Figure 4 (p165) shows the results for the Muslin Footman, again adjusted for the number of trapping nights.

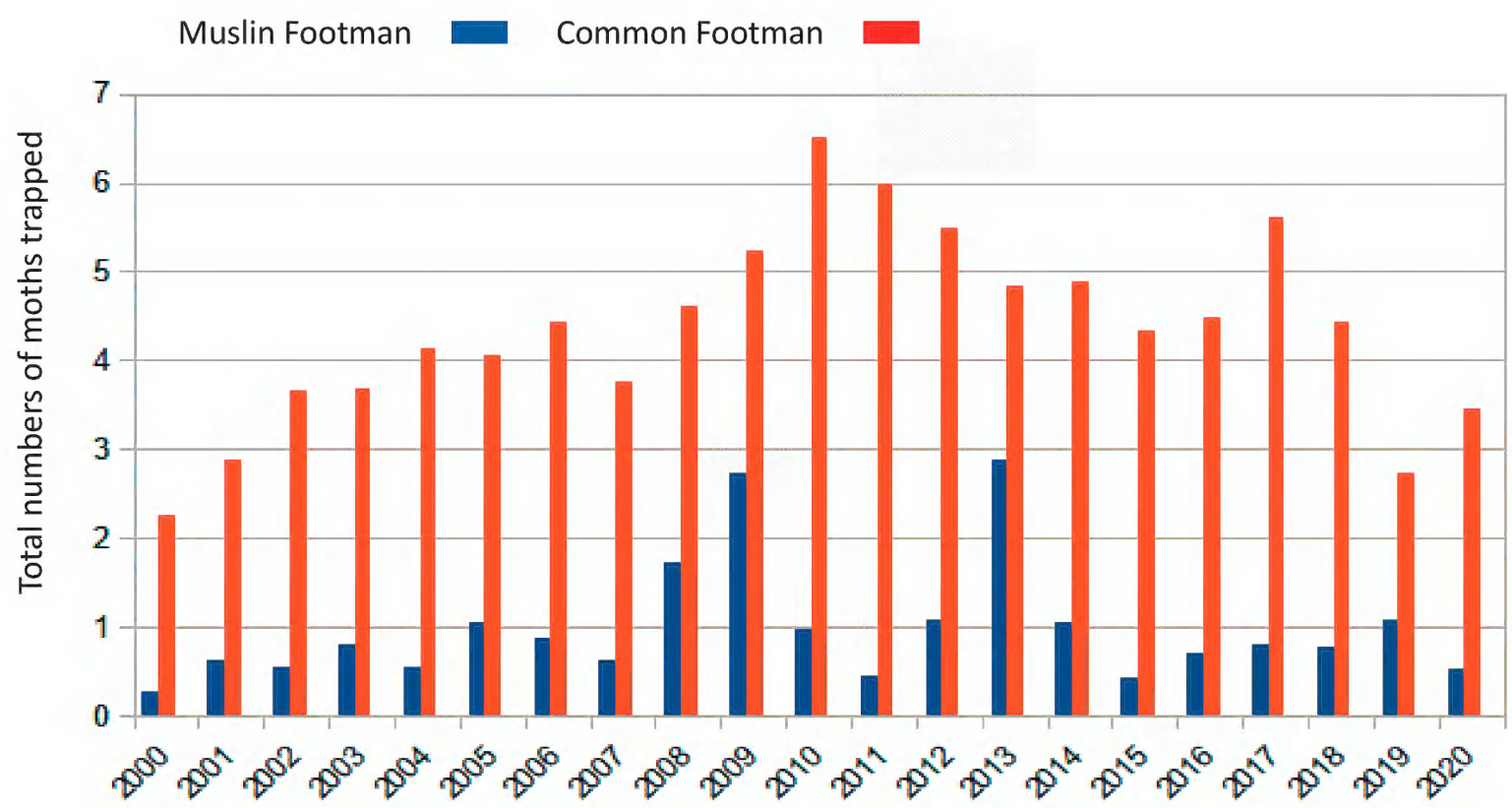

Figure 3 shows the mean catch per trapping session for each species in Lancashire

All three areas reached a peak in 2009 and 2018. Otherwise, there was no coordination between the areas for the other oscillations in population size. Neither of these two peaks coincided with the adjusted county populations. Similarly, when considering the troughs in numbers, on just two occasions did the local areas match those for the county. This would suggest that weather conditions are not the sole determinants of the population fluctuations.

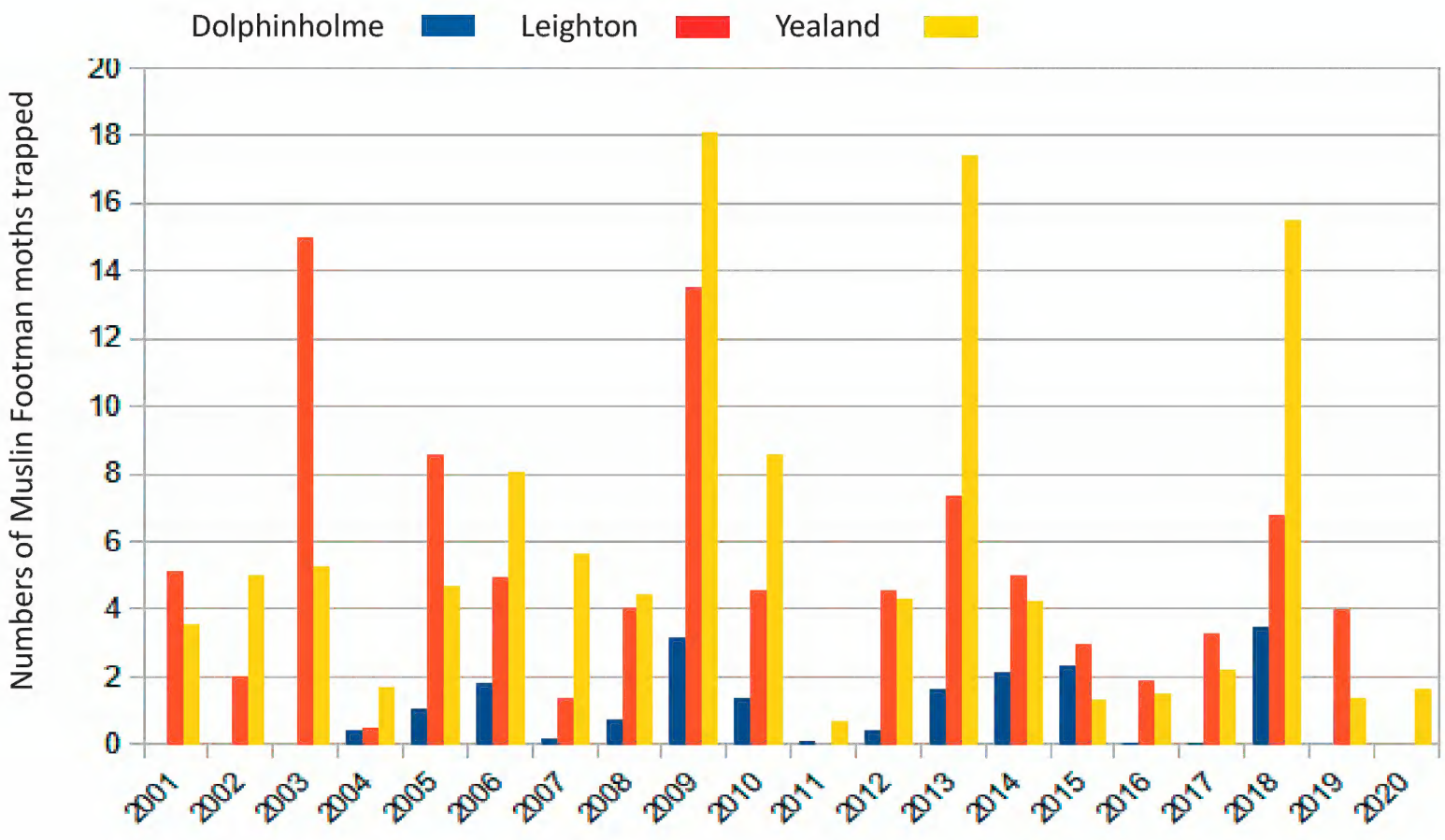

Figure 4. Adjusted Muslin Footman records from 3 Lancashire sites

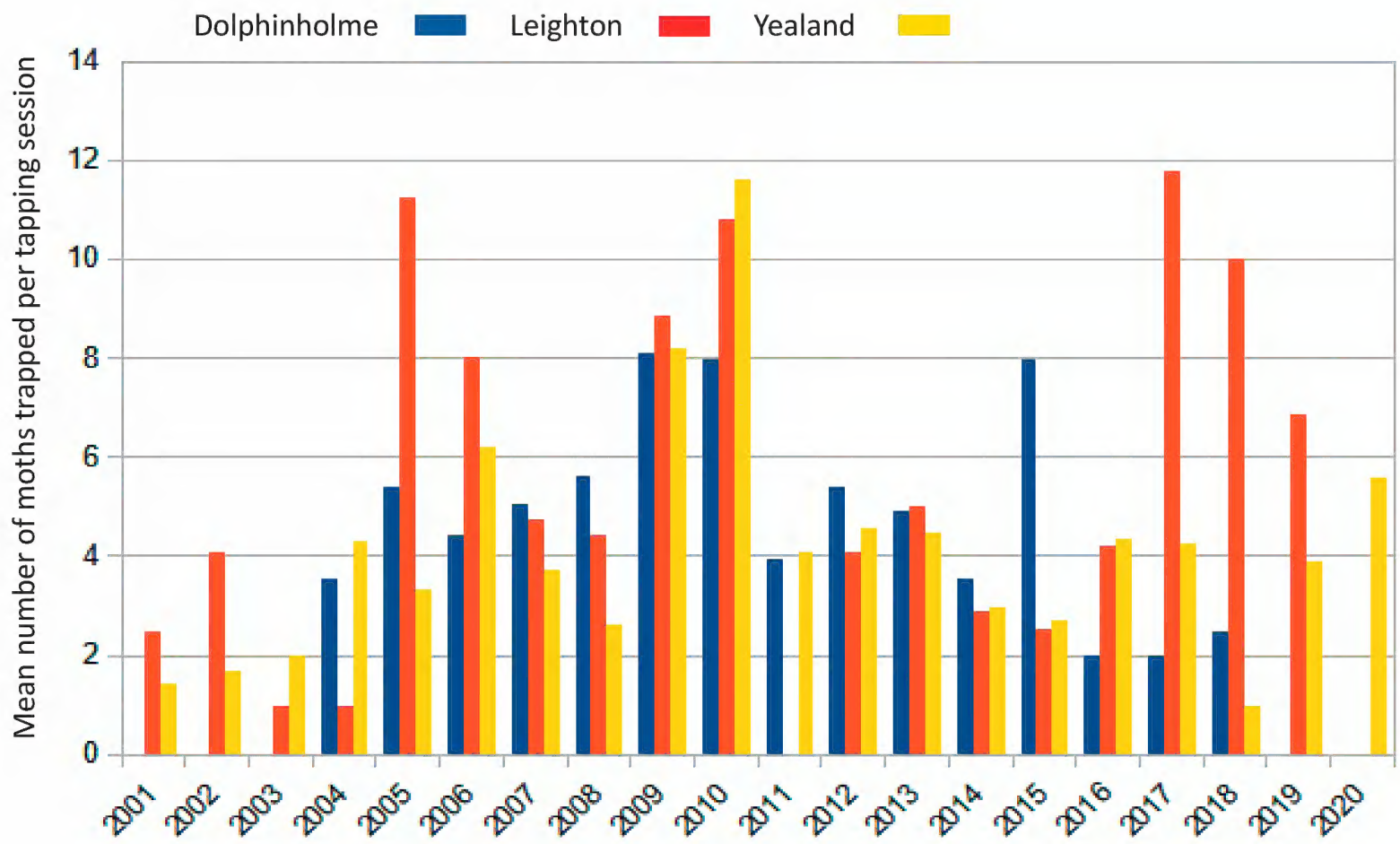

Figure 5. Adjusted Common Footman records from 3 Lancashire sites

Figure 5 shows the results for the Common Footman, which presents an even more confusing picture when comparing the three areas and the county as a whole. As Yealand and Leighton are so close to each other one might have expected that they would show similar population dynamics. When

comparing the peaks and troughs for the two moths there does not appear to be any pattern at all. Once again, the results suggest that weather is not the sole factor in determining population size.

Another approach to the analysis of the data is provided by a consideration of the annual growth rate in the populations of both moths. The Rothamsted Insect Survey shows that for the period 1967 to 2016 these were 2.11% (Muslin Footman) and 0.93% (Common Footman). The figures for the adjusted Lancashire data were 2% and 1.71% respectively. For the three areas they ranged from +6% to -3.3% for the Muslin Footman, and from 2% to nearly 4% for the Common Footman. Thus, whilst the populations of both moths are on the increase nationally, and also for Lancashire as a whole, there are some areas within the county where the Muslin Footman is on the decline.

Table 1. Summary of the first and final trapping records for Lancashire.

	First record	**Mean**	**Final record**	**Mean**	**No. of days**	**Mean**
Common	25 May	6 June	27 Sept	26 Aug	58-104	80
Muslin	31 May	15 June	20 Aug	8 Aug	40-83	54

The final analysis relates to the length of time that the adults are on the wing. Table 1 is a summary of the county records for the period between 2000 and 2020 of the first and final record for each species. The adult Muslin Footman moths appear slightly later than the Common Footman and are on the wing for a shorter period. It is possible that mating success and the number of eggs laid may be influenced by weather factors such as rainfall. For example, a wet summer may result in higher adult mortality and fewer eggs laid with a reduction in the population the following year. Unfortunately, it was not possible to establish a link between the length of flight periods, numbers trapped and rainfall in June to August for any year.

Discussion

There have been very few published studies of the population ecology of British moths. One notable exception is that of the Winter Moth at Witham Wood near Oxford (Varley & Gradwell, 1968). Most moths have tremendous reproductive potential with the ability to lay 200-500 eggs during their short lives. Most of the progeny do not survive to reproduce so data for all life history stages are needed to explain the population dynamics. In general, the key factors are disease, predation, parasitoid load and dry season starvation. Unfortunately, we know too little about the ecology of the two moths in this study to be able to explain the yearly fluctuations in their population.

Whilst we are fortunate to have extensive data for the adult moths the information is not easy to interpret. As there is considerable variation in the number of traps operated each year it is important to adjust for this to provide what can only be an estimate of the population in any one place.

As these are the only data we have, the present study attempts to make the best use of them to further understanding of the ecology of these two moths. Earlier work in the Yorkshire Dales found that their caterpillars shared the same habitat of the drystone walls and that they also fed on a similar range of lichen species (Pearson, 2020 a&b). As the populations of the Common and Muslin Footman adults fluctuated independently of each other it could be assumed that abiotic factors, such as weather, are not solely responsible for the oscillations, as we would expect both moths to be equally affected.

The same reasoning could also be applied to biotic factors such as predation in explaining the population regulation of these moths. With such a broad range of possible predators (birds, mammals, amphibians, reptiles as well as invertebrates) of the eggs, larvae, pupae and adults it

would be expected that there would be similar fluctuations in the two populations. But perhaps there are specific parasitoid insects or predators that attack one of them but not the other. This is clearly speculation, with no evidence for this being the case, but may provide an avenue for further research.

This interpretation of the data was undertaken to try to explain the oscillations in the trapping records at Ingleton. In 2021 I had hoped to tackle the task by looking at the number of caterpillars to see if they also shared similar oscillations which matched those of the adults. For convenience I chose the walls of Town Head in Austwick and was surprised to find that in the late spring and early summer I found only a single Common Footman caterpillar. With a complete collapse of the population, I now realise that in any area the population is composed of meta-populations. With limited ability to travel the larvae may consist of isolated groups which are the result of eggs laid by a limited number of females. As adults they become more mobile and are able to reproduce with other groups. Thus the moth traps are an amalgamation of catches from numerous larval populations. Varley and his group studying the Winter Moth collected their data from just five mature trees over a twelve-year period from 1950. The key factors determining mortality not only vary between species but also within populations over time so it was wildly over-optimistic to expect that the county trapping data would provide the answers!

Acknowledgements
John Perry and Justine Patton not only provided data but also made helpful comments on an initial draft.

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Tormentil mining bee *Andrena tarsata* and its nomad *Nomada roberjeotiana*: North Yorkshire research and conservation

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Introduction

Survey and conservation work in North Yorkshire has been carried out on the Tormentil Mining Bee *Andrena tarsata* over the last 3 years, by the Species Recovery Trust (SRT) northern invertebrate-focused Programme Manager. The SRT has worked with the Bees, Wasps & Ants Recording Society (BWARS), national and local bee specialists, as well as land managers, to better understand the ecology and conservation of this rare and threatened solitary bee and its cleptoparasite the Tormentil Nomad Bee *Nomada roberjeotiana* in North Yorkshire.

Species description

A. tarsata is a small dark solitary bee. The female (7-10mm) has translucent yellow-orange hind tibiae and tarsi in contrast to the dark femora. Its mesonotum is partially black-haired, and it is the only British *Andrena* female with a three-toothed mandible, rather than uni- or bidentate (though worn specimens appear two-toothed); and with tergites that appear 'lumpy'. The male (6-9mm) has a yellow/creamy-white clypeus with two black spots, a mix of black and silver/white hairs on the thorax (other similar species have only pale hair) and the outer surface of hind tarsi are translucent yellowish-brown, contrasting with the maroon of the hind tibiae. Inner orbital margins are fringed with upstanding black hairs (Hislop 2011, BWARS website *Andrena tarsata*).

Its cleptoparasite *Nomada roberjeotiana* is a small (5.5-6mm) nomad bee with the gaster mainly red and with a pair of lateral yellow spots on gastral tergites 2 and 3, plus a red scutellum (BWARS website *Nomada roberjeotiana*).

Distribution

Tormentil Mining Bee is a north European bee that is much scarcer further south. Stöckhert (1933) describes it as being boreal-alpine. Its range extends from central Fennoscandia south to Spain, and eastwards to the former Czechoslovakia and USSR (BWARS website *Andrena tarsata*). It is found across the UK in England, Wales and Scotland but only in low numbers.

Although the Tormentil Mining Bee is widespread, it has been lost from 50% of its former sites since 1970 so its distribution is fragmented and localised (BWARS data). The South West (Cornwall, Devon and Dorset) and Yorkshire have been identified as its strongholds (Buglife 2014). Although noted as scarce, it is possibly under-recorded because of its small size.

The Tormentil Nomad Bee is also a north European bee, becoming sporadic further south in central Europe and is also known from Japan (BWARS website *Nomada roberjeotiana*). It is much scarcer than the Tormentil Mining Bee, since it only occurs where populations of its host are particularly strong (Dimond *et al*. 2014). It was formerly widespread in England, West Wales and into Southern Scotland. Recent surveys by Paddy Saunders have identified 7 Cornish sites with the West Penwith area likely to be of national importance, as it currently has more recorded sites than anywhere else in the UK (Saunders 2016).

Habitat ecology

Tormentil Mining Bee can be found on the wing for 4-6 weeks between mid-June and late August, although in North Yorkshire it appears to stop flying in early August (L. Hislop pers. comm.) and the peak survey time is July. In Cornish surveys males 'peak' earlier than females in June (Saunders 2019). This bee produces a single brood annually (Hislop 2011).

It is found on acid habitats such as moorland, heath, acid grasslands and open wood (but more rarely). It is known to prefer sunlit, sheltered areas where it can keep warm and active. It also colonises disturbed areas such as cleared woodland plots and abandoned quarries. Woodland rides, scrub and roadside verges may provide habitat corridors between sites (Buglife 2014).

It is considered to be oligolectic and is heavily reliant on Tormentil *Potentilla erecta*, a perennial herb in the rose family, as a source of pollen and nectar, although occasionally it will use similar flowering plants for nectar, for example, Shrubby Cinquefoil *P. fruticosa*. Murdo MacDonald has also observed it collecting pollen from the latter (L. Hislop pers. comm.). It requires high densities of Tormentil flowers, particularly dense bushy stands that are not heavily grazed, ideally covering 30% of the

site in July (Saunders 2019). Previous studies have shown a clear link between flower abundance and the Tormentil Mining Bee's abundance (Saunders 2016). In Europe it has been noted that the species does use other species of *Potentilla*, as well as other Rosaceae (*Fillipendula* and *Rubus*) and has been observed visiting *Calluna* for nectar (S. Roberts pers comm; Hislop 2011).

Female Tormentil Mining Bees collect Tormentil pollen to stock the nest for their larvae. Though they may form nesting aggregations, each nest is independent. Preferred nest sites are sheltered, sunlit, south (east)-facing bare earth banks that are vertical or sloping (Saunders 2019) but flat and low areas have also been observed (Saunders 2016, 2019). Other bare or sparsely vegetated areas such as paths and tracks may also be used up to 250m from feeding areas (Buglife sheet 2014). It is critically important that potential nest sites are close to high densities of good quality Tormentil plants (P. Saunders pers. comm.).

The cleptoparasite females lay their eggs in *A. tarsata* nests where the larvae hatch and eat the host's food stores (Buglife sheet 2014).

Left: Tormentil Mining Bee *Andrena tarsata* on a Tormentil *Potentilla erecta* flower. *Photo © Paddy Saunders*.
Right. Tormentil Nomad Bee *Nomada roberjeotiana. Photo © Stephen Falk*

Threats

The threats to Tormentil Mining Bees are the loss, fragmentation and deterioration of Tormentil-rich habitats through agricultural improvement, loss of heathland, and over- or under-grazing e.g. summer grazing of moorland and heathland can destroy taller, bushy stands of Tormentil. Although it is still present, it is often very low growing, and so does not provide the right habitat for this bee. Forestry operations can also cause local extinctions by churning up rides (Buglife sheet 2014).

Equally as important are open sandy nesting sites which are easily lost due to vegetation growth. Without natural disturbance processes they often do not occur, and some active management is needed to maintain them.

Tormentil and bee nesting sites are also threatened due to scrubbing over by dominating plants,

such as bracken *Pteridium aquilinum* and gorse *Ulex europaeus*, related to changes in management. Cornish surveys conducted annually have noted that the hot and dry summers have affected the numbers of Tormentil Mining Bees recorded, and so climate change may be another threat.

Status

Due to the changes in the populations of Tormentil Mining Bees in Northern Europe and the evidence of its decline in the UK, particularly in the number of occupied sites post 1970 (JNCC 2010), it has been listed as an S41 Priority species in England due to the dramatic declines. On the 'European Bee Red List' it is listed as being Data Deficient (Nieto *et al.,* 2014). Tormentil Nomad Bee does not have an official conservation listing in the UK and is on the European red list with a status of Near Threatened (Nieto *et al. loc. cit.*).

North Yorkshire survey summary

Tormentil Mining Bee surveys were started in Yorkshire by SRT during 2019-21, with surveys of five key sites for the bee and its nomad in North Yorkshire. The sites were chosen from BWARS records and specialist advice (see Table 1 below of historic and more recent records). Interestingly, two of these five sites (Allerthorpe Common and Strensall Military Training Ground), were recognised in a recent *Naturalist* Article (Archer 2021) as excellent ones for bees and wasps with over 100 species recorded. There are some South Yorkshire sites with historic records from the 1990s that still need to be surveyed; initial examination on Google Earth has shown that most sites do not look very promising, but it would be worth following up on these.

The 2019 survey rediscovered the bee on three of the five sites, with repeat records for all these sites in either 2020 or 2021. The surveys were not annual at all sites between 2019 and 2021 due to COVID and the surveyor being on maternity leave, but results and survey effort are outlined in Tables 1 and 2. Note that 2021 was a difficult surveying year for this species with challenging weather in July, and Tormentil Mining Bees were in low numbers and could not be found on one site.

Allerthorpe Common is by far the best site for this bee in North Yorkshire with it being easy to find and survey in July. It is a lot more challenging on both Pamperdale and Jugger Howe where it seems to be restricted to a very specific habitat type and in low numbers. More details are given below on the individual sites and their habitats. Tormentil Nomad Bees have yet to be re-found on any of the sites; however its historic records are outlined below (see Table 2).

Table 1. Surveys for Tormentil Mining Bees in North Yorkshire

Site name	Historic Records	Records 2019	Records 2020	Records 2021
Allerthorpe Common	Extensive historic records for *A.tarsata* from 1925 to 2008	C.10 individuals mainly ♀s.	No survey	28 individuals in 1 hour's surveying.
Pamperdale	First recorded in 2011, possibly overlooked previously	5 ♀s on taller Tormentil further into site	No survey	2 ♀s + 1 ♂,
Jugger Howe	First recorded 2010, possibly overlooked previously	1 ♀ on tall Tomentil on heathy bank by carpark (outside main site)	1 ♀ on mound in car park	None found

Hole of Horcum	Two records in 1937, 2005 & 2011	None found	No survey	None found
Strensall Military Training Ground	Extensive records in 1971,1981, 2005, 2006, 2008	None found	No survey	None found

Table 2. Surveys for Tormentil Nomad Bee in North Yorkshire

Site name	**Historic Records**	**Records 2019**	**Records 2020**	**Record 2021**
Allerthorpe Common	Extensive records in 1927, 1928, 1929, 1935, 1973, 1975, 1976, 1983	None found	No survey	None found
Pamperdale	No historic records	None found	No survey	None found
Jugger Howe	No historic records	None found	None found	None found
Hole of Horcum	No historic records	None found	No survey	None found
Strensall Military Training Ground	Extensive records in 1971, 2004, 2006, 2009	None found	No survey	None found

North Yorkshire site descriptions

Allerthorpe Common

This site has extensive historic records for both bee species, although the nomad is yet to be re-found here. Allerthorpe Common appears to be the most important lowland heath site for Tormentil Mining Bees in the county; interestingly it is the only site without sheep grazing. There is a powerline running through the site and underneath is a sandy track (apart from hardcore directly adjacent to the powerlines). This track and its edges are kept open by cutting to allow powerline management and this has led to a flowery sward. This, together with the sandy open areas due to human trampling along the track, means the right conditions for the species have been created. The area is also ideal for a wide range of other heathland invertebrates.

Conversations with both Forestry England and Yorkshire Wildlife Trust have already explored management to maintain and extend this important 'bee track' to benefit Tormentil Mining Bees as well as many other invertebrates.

Jugger Howe

Jugger Howe is a moorland site on Fylingdales and a new site for the Tormentil Mining Bee back in 2010, but its nomad is yet to be recorded there. Tormentil Mining Bees were originally found on the main moorland site but recent surveys have not re-found it. This may be because the grassy sward is very short and species-poor. The Strickland Estate confirmed that the management changed around 2010, with a slight increase in sheep grazing. Recent surveys have shown that the bee is in low numbers and restricted to two mounds in the car park where there is no grazing. Here Tormentil is growing in a bushy structure; however scrub growth in this area (such as gorse) could be an issue. There have been discussions around temporary fencing on the main site (close to the car park with its historic records) to see if this encourages Tormentil; also around initiating scrub management on the 'bee mounds' to improve Tormentil

growth and open sandy areas.

Sandy track at Allerthorpe Common 2021. Photo: Vicky Wilkins

Sandy 'cliff' at Allerthorpe Common
Photo: Vicky Wilkins

Pamperdale Moor

This moorland site is a track up near Cod Reservoir where Tormentil Mining Bees were first recorded in 2010. They have been present in recent years but appear to be in low numbers. There is grazing but this doesn't seem to be affecting this bee so much but there are issues with ditch dredgings and forestry management affecting important grassy areas. The estate owners have not shown much interest in engaging with management for this bee; however, the site will continue to be surveyed and engagement encouraged.

Strensall Military Training Ground

Attempts to find the right conditions of open sandy nesting habitat with flowery Tormentil on this important large historic site for both the Tormentil Mining Bee and its nomad have proved difficult. The most likely area so far identified is the sandy track running through the central northern part of the site, but the species has not been found there, including during the July 2022 YNU field visit. Extensive surveying of the danger zone and World's End still needs to be undertaken, and there is still hope that the bee might be re-found. The conservation group including the MOD custodians are keen to accommodate it and the key site attributes it represents, i.e. sandy bare ground and tall-growing flowery areas.

Hole of Horcum

Despite a lot of historic records for Tormentil Mining Bees and its nomad, multiple site visits have failed to re-find them. There is definitely enough Tormentil but nesting sites are adjacent to a well-used footpath; SRT will continue to re-survey the site.

Future Practical Management

This project is providing greater understanding of the Tormentil Mining Bee on the heath and moorland sites of North Yorkshire, its habitat, as well as its conservation needs.

Tall flower-rich grassy areas are key for this bee and many other invertebrates. These palatable areas for sheep can be very strongly impacted by grazing, even at low levels. This was particularly highlighted at Jugger Howe where a slight increase in grazing caused the tall growing Tormentil to be lost, restricting Tormentil Mining Bees to the 'bee mounds' in the car park. In those sites not grazed, such as Allerthorpe Common, scrubbing up can occur and so this habitat can still be lost. It is the right type of grazing, at the right time that is important. Another option, if no grazing is present, is for some other opening-up management through either cutting or disturbance.

Open sandy areas and cliff – These bare ground areas are key nesting sites for this bee as well as many other mining bees, also providing hunting areas for tiger beetles etc. Track edges allow open sandy areas that can be important nesting habitat and any sandy cliffs present on site are also important. Maintaining, increasing and improving these areas is a key part of this bee's conservation management.

Conclusion

Ongoing survey work and management is needed to increase understanding of this species, its populations, ecology and distribution in North Yorkshire, as well as to secure its long-term recovery. The Species Recovery Trust will continue to collaborate closely with land managers and key volunteers to highlight the importance of this species and the bee-rich habitat it represents, particularly 'grassy flower-rich edges and sandy bare ground' and to improve sites for it and its nomad in North Yorkshire.

Anyone visiting sandy sites with Tormentil is encouraged to look in the flowers for this small bee. It is distinctive as it fills the flower, doing a circular foraging movement in each one before hopping to the next. A collecting pot over the flower can be used to catch the bee, and a hand lens used to check for some of the easier features such as the orange legs of the female or the white face markings in the male. If anyone has any possible sightings and/or is interested in getting involved in the monitoring of this species please email the author (see above).

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Rev Francis Orpen Morris (1810 – 1893)

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Visitors to the Treasure House in Beverley this spring and summer have been inspired by our exhibition *Birds, Books and Belfries: An East Yorkshire Parson-Naturalist*. "A nineteenth century Chris Packham" is how one visitor described Rev Francis Orpen Morris, subject of the exhibition, in the comments book. We explored his ten years as vicar of Nafferton where Morris found much to complain about but by chance came into the sphere of Benjamin Fawcett. Finally, we looked at his forty plus years as vicar of Nunburnholme, a village he loved (helped by the lack of pubs!) and where his campaigning with the Association for the Protection of Seabirds led to what is thought to be the first legislation in the world to protect birds, The Sea Birds Preservation Act, 1869.

Morris was famously argumentative and opinionated, meaning he often fell out with people, but his single-mindedness did mean he got things done.

The Scarcity of the House Sparrow in Doncaster (Morris, 1837) in *The Naturalist* is one of Morris' first published articles.
After a typical falling out, he asked another natural history magazine to publish a notice saying he wants no further involvement with "that periodical".

We see his fieriness when he squares up to bird trappers he meets whilst on his parish rounds at Nunburnholme, telling the men he will stay until 10 o'clock at night if they don't clear off. On two occasions Morris gives notice that he wants to talk about bird shooting at the East Riding Quarter Sessions in Beverley – he causes upset when he fails to show with no apology then turns up so late that the magistrates refuse to listen to him.

In a rare example of Morris' thought for how his actions might affect others, he writes in *The Seagull Shooter* (1890) that he wishes no ill on the East Yorkshire fishermen who were taking visitors to shoot birds on the cliffs but wishes instead they could be employed to take people to see "that wonderful and most interesting sight, the birds in their native home".

Morris would have loved the new visitor centre at RSPB Bempton Cliffs whose aim is to give sensitive access to the spectacle of the seabird colonies. Staff from the RSPB worked with us on events and shared a stunning film *A Day in the Life of RSPB Bempton Cliffs Reserve* by George Stoyle which you can find on YouTube. We hoped that the film would inspire visitors to go to the cliffs and enable those who couldn't visit to share the experience.

We are hoping to produce a web resource about Rev Morris to continue sharing his story and the part that East Yorkshire played in bird conservation.

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Useful resources

British Newspapers Archive britishnewspaperarchive.co.uk (free to use in many libraries – either onsite or remotely) is a great resource for tracking down newspaper articles.
The website benjaminfawcett.co.uk is a mine of information.
Details of books by Morris held in East Riding Archives can be searched on the catalogue at eastridingarchives.co.uk
The website biodiversitylibrary.org is a fantastic resource for digitised Morris books plus some of the natural history magazines his articles appeared in.
Finally, our web resource will be available at eastridingmuseums.co.uk

Images

Photograph of Rev Morris from his biography by son Marmaduke Morris. A copy is held in East Riding Archives. A digital version can be viewed at biodiversitylibrary.org

The wonderful ammonite: *Procerites (Gracilisphinctes) mirabilis* from Huntsman Quarry, Naunton, Gloucestershire collected by Mr A. J. Phipps of Yorkshire

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Introduction

The collection of an impressive ammonite from Huntsman Quarry, Naunton, Gloucestershire by the author's late father, referred to as A.J.P. in this paper, was first mentioned in this journal in the description of a pterosaur wing bone from the site (see Phipps, 2018, for details). Having spent a number of years occupying a considerable portion of the author's desk, the ammonite has been transferred to Oxford University Museum of Natural History (OUM) and, therefore, it seemed appropriate to describe and figure the specimen in this short paper.

Details of the site

The following information, with minor amendments and additions, has been extracted from the pterosaur paper (Phipps, *op. cit.*) as both specimens were collected from the same location. "Huntsman Quarry, also known as Huntsmans or Huntsman's, (SP123255) is situated 2km to the north-east of the village of Naunton in Gloucestershire. It is currently the only major working quarry in the area but, unfortunately, most of the rock extracted is crushed for road-building aggregate and ready-mixed concrete (Joynes, pers. comm., 2018). The site was famous in the past for the production of 'Cotswold Slate', the tilestone which provided the characteristic roofing materials of the Cotswolds." However, this traditional and informal term may include rocks from different lithostratigraphical units and ages from various sites in the area (Sumbler, pers. comm., 2022).

"The location is described in detail by Richardson (1929, pp.113-114) and more modern descriptions are provided by Mudge (1995, p.44; fig.9, p.42) and Sumbler (2002, pp.194-196). It is mentioned in the works produced by McKerrow (1964, pp.4-5), Kennedy *et al.* (1973, pp.6-7) and Sumbler *et al.*, 2000, p.58). In addition to providing the best exposure of the 'Cotswold Slate' in the area, Huntsman Quarry is the type locality of the Eyford Member of the Bathonian Fuller's Earth Formation (Sumbler, *loc. cit.*). The ammonites which the site has yielded, most notably *Procerites progracilis* Cox & Arkell, 1950 and *P. mirabilis* Arkell, 1958 indicate that the Eyford Member should be assigned to the Progracilis Zone of the Middle Bathonian Substage (Middle Jurassic) (Torrens, 1969)." A review of the ammonite fauna of this Zone has been provided by Page (2001, pp.133-134; p.142). Radiometric ages have been established for the Bathonian Stage: figures quoted by Cox (2002a, p.3) indicate that the rocks of this period are between 164.4 and 169.2 Ma (million years) old. "The quarry is recognized by Natural England as a Site of Special Scientific Interest due to its great palaeontological and stratigraphical significance."

Details of the specimen

The ammonite is an uncrushed specimen of *Procerites* (*Gracilisphinctes*) *mirabilis* Arkell, 1958 with a maximum diameter of 280mm (see Figure 1, Front cover and Figure 2, p177). Arkell's monograph provides full details (1958, Part 7, pp.201-202; plate XXVII, fig. 3; plate XXVIII, figs 6-9) and features a specimen from his own collection (OUM. J1160; plate XXVIII, fig. 8) from Huntsman Quarry which is remarkably similar in appearance to the example described in this paper. *P.* (*G.*) *mirabilis* can be distinguished from the similar *P.* (*G.*) *progracilis* Cox & Arkell, 1950 by its larger size, coarser, blunter ribbing and more compressed whorl-section (as illustrated in Arkell's text-figure 72, *op. cit.*, p.198). The other diagnostic feature of *P.* (*G.*) *mirabilis* is that the ribbing disappears well before the end of septation (Cox, pers. comm., 2022). The junction of a septum between the internal chambers of an ammonite conch with the shell wall appears on the surface of the fossil as complex and convoluted suture-lines. These can be seen clearly in Figure 1 and, indeed, they do continue beyond the point at which the ribs have faded: the specimen is wholly septate.

Following the works of Callomon (1963) and Makowski (1963), it is widely accepted that biological species of ammonite displayed sexual dimorphism. The larger form within a dimorphic pairing is known as the macroconch [M] and its biological partner is the microconch [m]; this may well correspond to female and male. However, this concept can lead to confusion as many morphological species were described and figured before dimorphism had been proposed and accepted. Consequently, the ammonites within a dimorphic pair may bear different names as they were defined on the basis of shell morphology rather than biological relationships (see Callomon (1981) for further details regarding this topic). According to a number of renowned researchers (Klug *et al.*, 2015, p.282; Keupp & Riedel, 2010, pp.306-307; Mangold, 1970, p.23; Mangold *et al.*, 2012 pp.34-35, p.39), the large examples of *Procerites* are paired with small *Siemiradzkia* species; both the same biological

species, but they have been given different morphological names.

Although the microconch partner to *P.* (*G.*) *mirabilis* is likely to be found in the genus *Siemiradzkia,* there is insufficient material to establish which particular species (Cox, pers. comm., 2022; Zatoń, pers. comm., 2022; Énay, pers. comm., 2022). It may be that *Siemiradzkia* (*Planisphinctes*) *aurigera* (Oppel, 1857) is established as the corresponding microconch as new material becomes available (Chandler, pers. comm., 2022). This small evolute ammonite with large lappets is described and figured in Arkell's monograph (1958, Part 8, p.212, pp.227-229; p.229, text-figure 83, figs 3 and 4; plate XXXIII, figs 8 and 10).

As mentioned in the Introduction, the ammonite has been transferred to Oxford University Museum of Natural History and it now bears the specimen number OUMNH J. 777408. This museum is a suitable repository as it has an extensive collection of ammonites from the 'Cotswold Slate', is close to the area from which the specimen came and holds the pterosaur wing bone collected from Huntsman Quarry by A.J.P. (Phipps, 2018).

Figure 2. Lateral view of the ammonite. Oxford University Museum of Natural History specimen number: OUMNH J. 77408. The specimen is 280mm in diameter and wholly septate.

Details ofthe matrix

As the specimen was not found *in situ*, the exact horizon from which it originated could not be established. However, the surrounding matrix had not been removed and, therefore, it is possible to identify the rock unit in which the ammonite was preserved. Samples of matrix were removed from the ventral region of the ammonite and these have been examined by highly experienced stratigraphers. Their comments indicate that the ammonite came from the Eyford Member of the Fuller's Earth Formation, probably from the upper part of the sequence (Sumbler, pers. comm., 2022; Powell, pers. comm., 2022). According to Sumbler (pers. comm., 2022), the rock is a "brownish grey limestone with quartz-sandy matrix containing a proportion of medium to coarse-grade calcareous material, mostly shell fragments, some more or less superficially lime-coated, and also with some

pellets of lime mud of a buff to pure white colour.". Although there is no mention of a lithology quite like this in the published report on Huntsman Quarry (Sumbler, 2000, pp.10-11; pp.21-23), the Eyford Member is "locally somewhat variable" (Sumbler, pers. comm., 2022). In addition, the areas of active quarrying have changed location over time and the faces which were worked in 1996 are some distance from the current extraction areas (Joynes, pers. comm., 2022).

Some of the matrix samples contain small, approximately 2.50 to 3.00mm high, isolated and abraded fish teeth. Although these have been examined by staff at the Natural History Museum, London, and photographs have been seen by fossil fish researchers, it has not been possible to assign the teeth to a particular genus. These samples of the matrix are housed with the ammonite at Oxford University Museum of Natural History.

The matrix provides an indication of the environment in which it was deposited. The presence of lime mud pellets, probably of faecal origin, suggests that the sediments supported infaunal organisms such as bivalves, echinoids or worms. Highly comminuted bivalve shell fragments and the presence of the isolated, rather worn fish teeth indicate that, as shown by Cox (2002a, p.10, fig. 1.6(e)), the area was covered by a shallow shelf-sea. The quartz-sand component of the rock may well have been derived from a nearby landmass, probably the London Platform which lay to the east (Sumbler, 2000, p.11). Sellwood & McKerrow (1974, pp.204-205) suggested that the Eyford Member was "probably produced under very shallow, agitated-water conditions" and that most of the shells had drifted due to wave or storm action. This view is supported by the highly fragmentary bivalve shell material and the degree of abrasion shown by the fish teeth. Indeed, the ammonite conch may well have undergone *post-mortem* transportation from a deeper oceanic area to the south.

An additional comment

As mentioned in the pterosaur paper (Phipps, 2018), the marine rock unit from which the fossils were collected does not occur in Yorkshire. Rocks deposited during the Middle Bathonian Substage in this area were deltaic and estuarine in origin and, therefore, ammonites and other marine invertebrates are absent or rare. Progracilis Zone deposits in East Yorkshire are not exposed but in North Yorkshire they form part of the estuarine Long Nab Member of the Scalby Formation (Cox, 2002b, fig. 5.2, p. 317). However, this situation is not peculiar to Yorkshire. Although ammonites occur in great profusion in the Lower Bathonian mudstones and limestones of Dorset and Somerset, at higher levels within the stage they "are generally rare in Britain, largely as a result of unfavourable environments or non-preservation in shallow water facies" (Page, 1996, p.45). This, together with the fact that most of the rock extracted from the site is crushed for aggregate, makes the specimen collected by A.J.P. and described in this paper of especial significance. As the translation of its specific epithet indicates, it is indeed a "wonderful ammonite".

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This paper is dedicated to the memories of Mr A. J. Phipps (1931 – 2001) and Mrs P. I. Phipps (1934 – 2021).

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Aquatic plants in village ponds of the Yorkshire Wolds and their eastern margin

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Introduction

Aquatic plants are often conspicuous in ponds. They are important ecological and wildlife features and are aesthetically attractive. In East Yorkshire, Linton carried out extensive field work on ponds and their plants in the summer of 1996. She surveyed 57 ponds, which had different origins, and included borrow pits alongside railways, ancient moats, village ponds, gravel pits, and clay pits. Her survey demonstrated a wealth of plants. Altogether, 70 aquatic plants were found, representing 38% of the aquatic vascular plant flora of England and Wales (Linton, 1999; Linton & Goulder, 2000). Another study in East Yorkshire, by Chicken (1996), focussed on plants in dew ponds—artificial ponds largely associated with enclosure in the 18th and 19th centuries (Hayfield & Brough, 1986). Chicken found in all about 20 aquatic plants

in 35 dew ponds, with 0-6 species per pond. Additionally, I have surveyed aquatic plants in sand and gravel quarry ponds at North Cave Wetlands. In 2013, the six ponds/lakes had 33 aquatic plants which had colonised since they were excavated 14-30 years previously (Goulder, 2014). Linton's study included 12 village ponds and showed much variation between these ponds in the abundance and diversity of their flora. Otherwise there has been little study of the vegetation of village ponds in the county. The aim of the work described herein was to investigate the water plants that are to be found in East Yorkshire village ponds, to reflect upon the relative importance of naturally occurring and introduced plants, and to assess the role of contemporary water gardening.

The ponds and their history

The ponds studied were in settlements that lie on the chalk of the Wolds and/or on superficial glacial deposits that overlie chalk on the gentle eastern marginal slopes of the Wolds. Twenty-one ponds (in 20 settlements) were studied (Table 1 p182 and Figure 1 p183).

The relationship between settlements on the East Yorkshire Wolds and their water supplies has been explored by Hayfield & Wagner (1995). They grouped villages according to the nature of their original water supply. Some relied on springs or streams. Others, however, are 'pond villages'. Their view was that the ponds that these villages relied upon are natural water bodies that were formed, perhaps c.15000 years ago, at the end of the last glacial period, in places where impermeable glacial drift overlies permeable chalk. They were filled by rain and local run-off. Hayfield & Wagner included Fimber, Fridaythorpe, Garton-on-the-Wolds, Huggate and Wetwang as pond villages.

It is also possible that some ponds, formed at the end of the glacial period, became filled by silt and encroaching vegetation over millennia, but survived as damp or boggy areas that people later dug out to make a pond. Village ponds are likely to have been maintained by periodic clearance of silt over the centuries. For example, the East Yorkshire antiquarian J.R. Mortimer (1825-1911) wrote about the removal, in the dry summers of 1826 and 1884, of three to six feet depth of mud from the bed of the Low Mere at Fimber (Mortimer, 1888-1890). He also stated that it is certain that village ponds are long-standing features of the landscape that have historically been a vital source of water. Allison (1976) reviewed evidence of prehistoric and Romano-British settlement in East Yorkshire and of later colonization by Angles and then Danes. His view was that, by the time of the 1066 conquest, settlements had arisen as wooden or earthen dwellings clustered around a church and close to a water supply, which was often likely to be a pond. All the ponds considered in this article (Table 1) are associated with places that feature in the 1086 Domesday Book (Anon., 1999-2019) except Fimber which was possibly overlooked. Neave & Neave (2008) believe that Fimber dates from the Anglo-Saxon period. Furthermore, nine of the ponds are labelled as 'meres' by 1890s OS maps (Table 1), and Fridaythorpe has a 'Mere Farm', an appellation which suggests that they were features of the Anglo-Saxon landscape (Crawford, 1970). He describes how the exposed clay bed showed signs of ancient digging. The find of an Anglo-Saxon, or possibly Romano-British, iron spearhead, beneath about 2 feet of mud, suggested that the 19th century clear-out was the first for many centuries. Several feet of mud were again removed from this pond in the dry summer of 1995 (Austin *et al.*, 2001).

Allison (1976) describes how, in the medieval period, settlements in East Yorkshire were developed into planned villages, often linear with houses along a village street, as at Wetwang and Walkington or, less often, around a green as at Cranswick. Nevertheless, ponds continued into the 19th century to be important sources of water for domestic use and livestock. This was notwithstanding the sinking of wells and the likely use of roof-water (Hayfield & Wagner; 1995, Hayfield, 2011). Hence Mortimer's much-cited account (Hicks,1978) of fighting between the inhabitants of Fimber and Fridaythorpe, during the drought of 1826, over the watering of livestock at the Fimber meres, following the drying up of those at Fridaythorpe. Mortimer also describes residents of Fimber drinking pond water as late as 1900, despite obvious impurities and the likely availability of well water.

Table 1. Ponds surveyed in May and August 2021.

Pond location	Grid Reference	Area (ha)	Waterfowl (ducks+geese)	Aquatic plants	
				Number of plants	∑abundance score
Bentley	TA 018359	0.027	8+0	5	9
Bishop Burton, larger pond*	SE 989398	0.386	c.35+6	6	11
Bishop Burton, smaller pond	SE 990399	0.060	0	10	21
Burton Agnes*	TA 104630	0.411	c.80+c.50	0	0
Cherry Burton	SE 991421	0.097	22+0	1	2
Cranswick	TA 024522	0.053	0	19	38
Etton*	SE 980434	0.078	0	3	6
Fimber*	SE 895606	0.063	3+0	8	18
Fridaythorpe	SE 874591	0.088	c.50+0	5	7
Garton-on-the-Wolds*	SE 983594	0.175	24+0	2	3
Huggate	SE 882553	0.108	15+0	4	7
Kilham, north-east pond	TA 067644	0.072	26+2	6	10
Little Driffield	TA 009579	0.073	c.70+0	1	2
Little Weighton	SE 987338	0.062	4+0	2	4
Lund	SE 968479	0.060	c.20+0	1	2
Middleton-on-the-Wolds	SE 945495	0.092	20+0	4	7
North Dalton*	SE 935521	0.223	c.20+8	9	15
South Dalton*	SE 968454	0.229	7+0	0	0
Walkington*	SE 999371	0.195	c.30+0	6	11
Warter	SE 871504	0.144	1+4	7	15
Wetwang*	SE 934591	0.101	3+0	6	10

Each pond was surveyed in May and August. Waterfowl counts are the higher from visits in May and August (ducklings and goslings not included). If abundance scores for plants differed between visits the higher values were used in calculation of ∑abundance score. *Labelled as 'mere' on 1890s OS maps.

Historically, ponds seem to have been closely integrated with their village environs. Margins were open, trampled by horses and cattle, and largely free of trees and shrubs. There was easy road access for water carts and for animals to be driven or led to the pondside. These features are shown by early photographs of Fimber, Fridaythorpe, Huggate and Wetwang (Austin *et al.*,

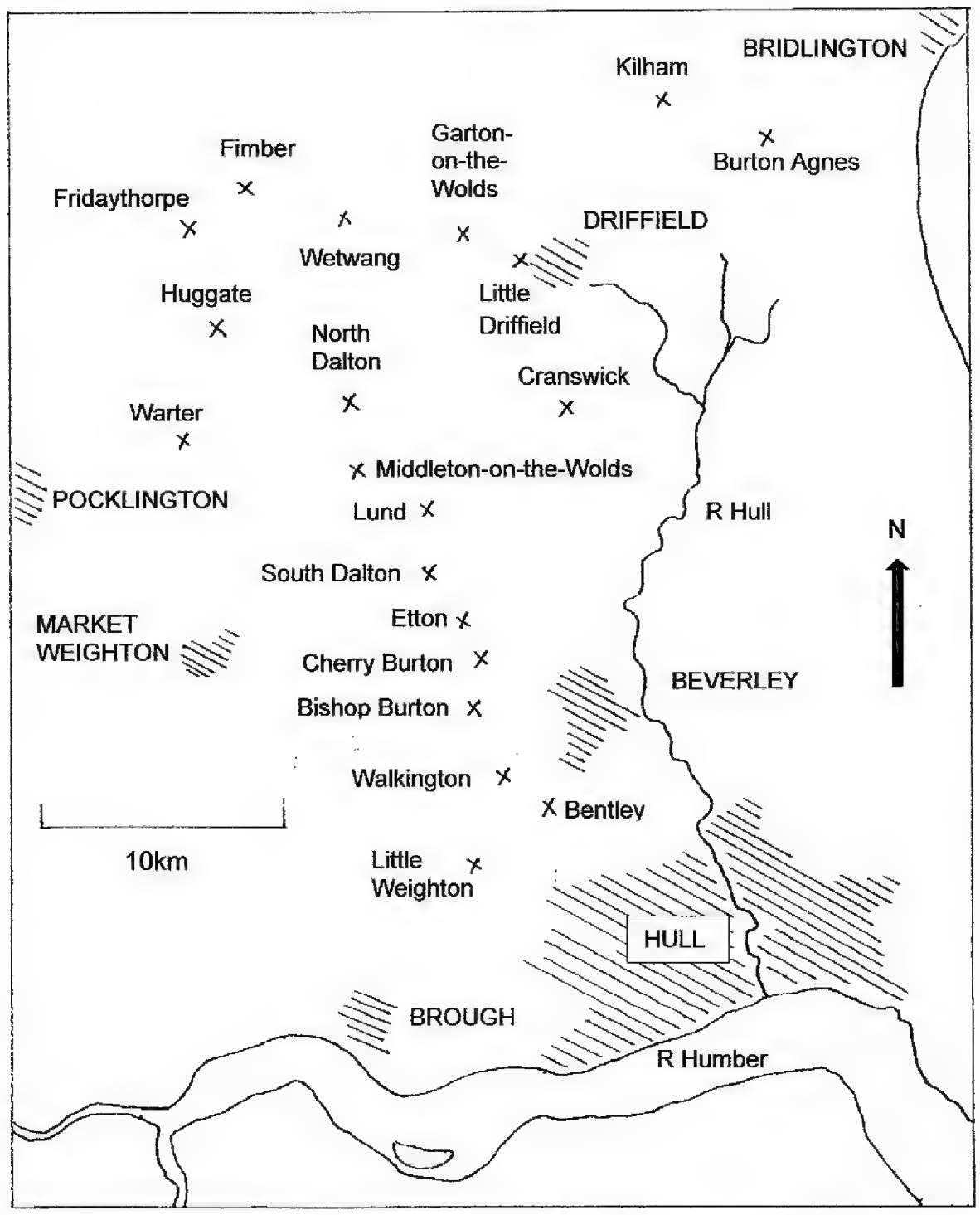

Figure 1. Map of East Yorkshire: (X) indicates settlements in which ponds were located (two ponds were surveyed at Bishop Burton).

2001; Neave & Neave, 2008; Lunn, 2009; Sharpe & Foster, 2011) that include a water cart at Fimber Mere as late as the 1930s. However, once mains water became widely available in the 20th century (Aylwin & Ward, 1969), and the ponds lost their importance for water supply, access became less important. Roads and ponds became disconnected. Hard and sheer concrete pondside margins were constructed, and sturdy fences, often of concrete posts and tubular steel rails, were installed between pond and now-tarred road. Nevertheless, road run-off water still helps to fill ponds. The ponds have become amenity features, sometimes with mown grass surrounds, often with planted trees and shrubs, ornamental gardens, benches and sometimes picnic tables. Some ancient village ponds have been reduced in size to make way for road widening or straightening, as at Wetwang (Lunn, 2016), or infilled, which befell the upper mere of the pairs once found at Fimber, Fridaythorpe and Wetwang.

The ponds and their aquatic plants in 2021

Pond areas were obtained from OS maps using the Edina Digimap area facility (https://digimap.edina.ac.uk). Areas range from 0.027ha at Bentley to 0.411ha at Burton Agnes (Table 1 p182). Observations in May and August 2021 suggested that the ponds are filled by rainfall, runoff from surrounding land and roads, and sometimes inflow from ditches. There was inflow from springs at Kilham and Warter. Water depth was generally less than 1m but was mostly much shallower. Transparency was variable; some ponds, like at Huggate, Wetwang and Walkington, were turbid, green, and apparently phytoplankton-rich, while others, as at Fimber, Warter, and Kilham in May, had clear water. Some ponds had a bed of chalk stones, for example at Etton, Fimber, Fridaythorpe, Garton-on-the-Wolds, and North Dalton, possibly spread to make a firmer bottom. Sometimes there were goldfish or carp *Carassius/Cyprinus* spp.– these were conspicuous at, for example, Cherry Burton, Huggate, North and South Dalton, and Little Weighton.

Waterfowl were often numerous (Table 1) and were sometimes encouraged; there were feeding stations at Bentley and Little Weighton, nesting baskets at Bentley and Kilham, duck houses at Bentley, Fridaythorpe, Little Weighton, Walkington, Wetwang, and the larger pond at Bishop Burton, and a vending machine to sell feed at Wetwang. Conversely, at Cherry Burton and Middleton-on-the Wolds, signage discouraged feeding. Ducks, mostly Mallard *Anas platyrhynchos*, were seen on all the ponds except at Cranswick, Etton and the smaller pond at Bishop Burton; >30 were counted at Fridaythorpe, Walkington and the larger pond at Bishop Burton, >70 at Little Driffield, and >80 at Burton Agnes. There were also a few geese *Anser/Branta* spp. (<10) at Warter, North Dalton, Kilham and the larger pond at Bishop Burton, while Burton Agnes in May had >50 geese.

Aquatic plants were surveyed following the approach used by Linton (1999) which was based on a method for surveying plants in rivers developed by Holmes (1983). Accessible parts of the pond margins were walked, plants were identified, and the abundance of each was estimated using scores 1-3, where 1=<0.1% whole-pond cover, 2=0.1-5% cover, and 3=>5% cover. When necessary, submerged plants were retrieved for identification using a grapnel or an extensible walking-pole with a hook attached to its end. Inaccessible emergent plants were identified using binoculars. Plants that are found in and around ponds occupy a continuum ranging from submerged plants, through floating-leaved, and marginal emergent plants, to terrestrial plants that favour wet and waterside places. It is difficult to decide which should be regarded as aquatic plants and which as wetland and terrestrial plants. To resolve this problem, I recorded as aquatic plants only those species that appear on Palmer & Newbold's (1983) checklist of 184 aquatic plants that are found in England and Wales (their Table 2). In addition, note was taken of conspicuous waterside plants that did not feature on the checklist. Nomenclature follows Stace (2019); scientific names are given in the tables or otherwise at first mention in the text. All ponds were surveyed in both May and August 2021; if the abundance scores differed between visits the higher was used. The sum of abundance scores (∑A) at each pond was calculated to give a metric that reflected both abundance and diversity of aquatic plants.

There was marked variation between ponds in the number of aquatic plants and in their abundance (Table 1, Figures 2 & 3 p185). The pond at Cranswick had most aquatic plants (19), followed by the smaller pond at Bishop Burton (10), North Dalton (9) and Fimber (8). In contrast, 12 ponds had five or fewer, none being found at Burton Agnes or South Dalton. Also, values of ∑A were high at Cranswick (38), at the smaller pond at Bishop Burton (21), and at Fimber (18), while ∑A equalled 10 or less at 14 ponds.

Figure 2 (left). The larger pond at Bishop Burton, August 2021. A late-summer bloom of Common Duckweed occupies much of the water surface; this with Curled Pondweed, which was also abundant, had colonised naturally; the emergent plant in the margin is the alien Sweet-flag which has most likely been planted, although it was here in 1996 (Linton, 1999). Aquatic plants and waterfowl, to a degree, coexist at this site.

(All photos by the author.)

Figure 3 (right). Little Driffield, August 2021. A pond devoid of aquatic plants apart from a small patch of Water Mint; it has many ducks and turbid water; its environs have mown grass, ornamental trees, and benches.

Altogether, 38 aquatic plants were found. These are listed in Table 2 p186 and their abundance scores are given. Submerged and floating-leaved plants are listed separately from emergent plants to help interpretation. Thirteen submerged/floating-leaved plants were found. Most frequently encountered was Common Duckweed, in seven ponds, being abundant (>5% cover) in the larger pond at Bishop Burton. Curled Pondweed was in both ponds at Bishop Burton and in the pond at Warter, being abundant in all three. Rigid Hornwort and Broad-leaved Pondweed were each in two ponds; the other nine submerged/floating-leaved plants were each found in only one pond.

Twenty-five emergent aquatic plants were found. Most often encountered was Yellow Iris, found in 16 ponds, being abundant (>5% cover) in two ponds and frequent (0.1-5% cover) in 14 ponds. Creeping Bent was recorded at 12 ponds, Water Mint at eight ponds, Reed Canary-grass at five ponds, and Lesser Pond-sedge, Greater Pond-sedge, and Bulrush each at four ponds.

Most of the water plants found are native to East Yorkshire (Robinson, 1902; Crackles, 1990), although several of the populations of these had clearly been planted; for example, Lesser and/or Greater Pond-sedge at Fridaythorpe, North Dalton, Walkington and Wetwang, Water-soldier, Bogbean and others at Cranswick, and Lesser Bulrush and others in the smaller pond at Bishop Burton (Note: Table 2 p186 gives a full list of plants found in the village ponds). Alien aquatic plants encountered were Sweet-flag in both the Bishop Burton ponds, Canadian Waterweed and New Zealand Pigmyweed at Fimber, and Curly Waterweed, at Cranswick.

Conspicuous wetland and waterside plants found at the ponds, but not on the checklist of aquatic plants, are listed in Table 3, p187. Great Willowherb was most often encountered. This common plant, which is dispersed widely by wind, was found at 18 out of 21 ponds. Pendulous Sedge and Purple-loosestrife were conspicuous at several sites but usually had obviously been planted.

Table 2. Aquatic plants in village ponds in May and August 2021

	Ponds where recorded
Submerged and floating-leaved plants	
Callitriche sp. Water-starwort	K[2]
Ceratophyllum demersum Rigid Hornwort	Cr[2], Fi[3]
Crassula helmsii New Zealand Pigmyweed	Fi[3]
Elodea canadensis Canadian Waterweed	Fi[3]
Lagarosiphon major Curly Waterweed	Cr[3]
Lemna minor Common Duckweed	Be[1], BBL[3], BBS[2], Cr[2], Et[2], Fi[1], K[1]
Lemna trisulca Ivy-leaved Duckweed	Cr[2]
Nymphaea x marliacea White Water-lily cultivar	Cr[2]
Potamogeton berchtoldii Small Pondweed	Cr[3]
Potamogeton crispus Curled Pondweed	BBL[3], BBS[3], War[3]
Potamogeton natans Broad-leaved Pondweed	Cr[3], Fi[2]
Stratiotes aloides Water-soldier	Cr[3]
Zannichellia palustris Horned Pondweed	BBL[1]
Emergent plants	
Acorus calamus Sweet-flag	BBL[2], BBS[2]
Agrostis stolonifera Creeping Bent	Be[1], BBL[1], BBS[2], Cr[2], Et[1], Fi[2], Fr[1], GW[1], Hu[1], MW[1], ND[1], War[2]
Alisma plantago-aquatica Water-plantain	Cr[1]
Caltha palustris Marsh-marigold	BBS[1], Cr[2]
Carex acutiformis Lesser Pond-sedge	Fr[2], War[2], Wal[2], We[2]
Carex riparia Greater Pond-sedge	Fr[1], MW[2], ND[2], We[2]
Eleocharis palustris Common Spike-rush	Cr[1], Fi[2]
Equisetum fluviatile Water Horsetail	Cr[2]
Glyceria maxima Reed Sweet-grass	Wal[2], We[2]
Helosciadium nodiflorum Fool's-water-cress	K[2]
Iris pseudacorus Yellow Iris	Be[2], BBS[2], CB[2], Cr[2], Et[3], Fi[2], Fr[2], GW[2], Hu[2], LW[2], Lu[2], MW[2], ND[3], Wal[2], War[2], We[2]
Juncus effusus Soft-rush	Hu[2], ND[1], We[1]
Mentha aquatica Water Mint	Be[2], BBS[2], Cr[2], K[2], LD[2], ND[2], Wal[2], War[2]
Menyanthes trifoliata Bogbean	Cr[2]
Nasturtium officinale Water-cress	K[1]
Persicaria amphibia Amphibious Bistort	BBS[2], ND[1]
Phalaris arundinacea Reed Canary-grass	Fr[1], K[2], LW[2], Wal[1], We[1]
Phragmites australis Common Reed	MW[2], ND[3], Wal[2]
Ranunculus lingua Greater Spearwort	Cr[1]
Ranunculus sceleratus Celery-leaved Buttercup	BBL[1], Cr[1]
Schoenoplectus lacustris Common Club-rush	Hu[2]
Sparganium erectum Branched Bur-reed	BBS[3]
Typha angustifolia Lesser Bulrush	BBS[2]
Typha latifolia Bulrush	Be[3], Cr[2], ND[1], War[2]
Veronica beccabunga Brooklime	ND[1], War[2]

Key to ponds: Be=Bentley; BBL=Bishop Burton, larger pond; BBS=Bishop Burton, smaller pond; CB=Cherry Burton; Cr=Cranswick; Et=Etton; Fi=Fimber; Fr=Fridaythorpe; GW=Garton-on-

the-Wolds; Hu=Huggate; K=Kilham, north-east pond; LD=Little Driffield; LW=Little Weighton; Lu=Lund; MW=Middleton-on-the-Wolds; ND=North Dalton; Wal=Walkington; War=Warter; We=Wetwang.

Superscripts indicate abundance scores: 1=<0.1% cover; 2=0.1-5% cover; 3=>5% cover. Each pond was visited in May and August; If scores differed between visits the value given is the higher.

Table 3. Wetland and waterside plants at edges of ponds in May and August 2021

Wetland and waterside plants*	**Ponds where recorded**
Cardamine pratensis Cuckooflower	BBS, Fr, K, Wal
Carex hirta Hairy Sedge	War
Carex pendula Pendulous Sedge	BBS, CB, Cr, Fr, LW, MW, ND, Wal
Cyperus longus Galingale	Cr
Epilobium hirsutum Great Willowherb	Be, BBL, BBS, CB, Cr, Et, Fi, Fr, Hu, K, LD, LW, MW, Lu, ND, SD, Wal, War
Equisetum arvense Field Horsetail	Cr
Filipendula ulmaria Meadowsweet	Cr, ND, SD
Fontinalis antipyretica Greater Water-moss	K
Juncus bufonius Toad Rush	Cr, War
Juncus inflexus Hard Rush	Cr, ND, SD, Wal
Lycopus europaeus Gypsywort	Wal
Lythrum salicaria Purple-loosestrife	Fr, LW, MW, Wal, We
Scrophularia auriculata Water Figwort	Be, BBL, BBS, BA, Cr, K, War

*A checklist was not used.
Key to ponds: Be=Bentley; BBL=Bishop Burton, larger pond; BBS=Bishop Burton, smaller pond; BA=Burton Agnes; CB=Cherry Burton; Cr=Cranswick; Et=Etton; Fi=Fimber; Fr=Fridaythorpe; Hu=Huggate; K=Kilham, North-east pond; LD=Little Driffield; LW=Little Weighton; Lu=Lund; MW=Middleton-on-the-Wolds; ND=North Dalton; SD=South Dalton; Wal=Walkington; War=Warter; We=Wetwang.

Short-term change and water gardening

Ad hoc records of aquatic plants in some of the study ponds (at Bentley, Bishop Burton, Fimber, Garton-on-the Wolds, Little Weighton, South Dalton and Walkington) were made between 2001 and 2009, usually with students from Hull University, or with H.H Abulreesh during his studies of faecal indicators and pathogenic bacteria in amenity ponds (Abulreesh, 2005). Comparison of these records with those of 2021 allows assessment of change or stability, although over a period that is very short in the context of the likely great age of the ponds.

In some ponds the aquatic vegetation showed little short-term change. For example, in summers of both 2001 and 2021, the ponds at Garton-on-the-Wolds, Little Weighton and South Dalton were largely devoid of aquatic plants and had few (0-2) species. In other ponds abundant vegetation and greater species richness were persistent. Thus, in 2008-2009 the small pond at Bishop Burton had abundant vegetation that included Common Duckweed, Sweet-flag, Creeping Bent, Marsh-marigold, Yellow Iris, Water Mint, Branched Bur-reed, and Lesser Bulrush - all these plants were still thriving in 2021. In other ponds there were lasting stands of emergent plants, for example Bulrush and Yellow Iris at Bentley in 2001 and 2021, and Sweet-flag recorded in the large pond at Bishop Burton in 1996 by Linton (1999) and still conspicuous in 2009 and 2021. The vegetation in some

ponds, however, changed rapidly. For example, in 2001 most of the pond at Bentley was occupied by Rigid Hornwort and Curled Pondweed but by 2021 these plants were lost. In contrast, the larger pond at Bishop Burton had no submerged plants in 2009, nor did Linton (1999) find any in 1996, but by 2021 Curled Pondweed was abundant.

The causes of short-term change are not always evident. In some ponds, however, short-term change was explained by the water gardening that tends to be undertaken by volunteers and/or the civil parish councils that have responsibility for them. This was obvious, for example, at Walkington. In June 2002 the mere was heavily tree shaded, ducks were abundant (>20), and aquatic plants were largely absent. Exceptions were sparse Common Duckweed and a few, obviously introduced, Bogbean plants. Additionally, some emergent aquatics had been planted in an enclosure of stakes and chicken wire, c.6m x 1m x 1m, constructed at the east end of the pond. The enclosure contained Yellow Iris, Greater Spearwort, Celery-leaved Buttercup and Fool's-water-cress, which survived because of the exclusion of waterfowl. By 2008, a second enclosure had been installed. In these enclosures, in May of 2008 and/or 2009, Yellow Iris, Greater Spearwort and Fool's-water-cress persisted while Common Reed, Water Mint and Lesser Water-parsnip *Berula erecta* were additional.

Outside the enclosures, there was limited colonization by submerged plants. Spiked Water-milfoil *Myriophyllum spicatum*, Rigid Hornwort and Horned Pondweed were noted in spite of continuing tree shading, many waterfowl, and turbid water.

A decade later, in 2018-2019, renovation of the pond was undertaken (Anon, 2018, 2019). Large, shading trees, especially Sycamore *Acer pseudoplatanus*, were removed and replaced by small ornamental ones. A decking walkway was constructed along the south margin, alongside the road, and separated from the pond by a stout fence. Two islands were created; an artificial cascade that circulates and aerates the water was renewed. Coir rolls with integral propagules of emergent plants were laid in the margin at the east end and elsewhere. By 2021, there was emergent marginal vegetation, up to 3m wide, but it was all essentially derived from planting during the 2018-2019 makeover. The plants recorded included Lesser Pond-sedge, Reed Sweet-grass, Yellow Iris, Water Mint, Reed Canary-grass, and Common Reed. Many waterfowl (c.30 ducks) remained, the water continued to be turbid, and no submerged or floating-leaved plants were seen. Clearly there have been notable changes in aquatic plants at Walkington over the past two decades but they have essentially been driven by water gardening.

Figure 4. Water gardening at North Dalton, August 2021. A wall separates the pond from the road; note the stony bottom and turbid water; no submerged or floating-leaved plants were recorded. The planting behind wooden boards includes Bulrush, Yellow Iris, Greater Pond-sedge, and Pendulous Sedge.

Figure 5. Water gardening at Fridaythorpe, August 2021. Introduced beds of emergent plants include Lesser Pond-sedge, Pendulous Sedge, and Yellow Iris. The water was very turbid and there were no submerged or floating-leaved plants; ducks were abundant; the pond surrounds have mown grass, benches, and picnic tables.

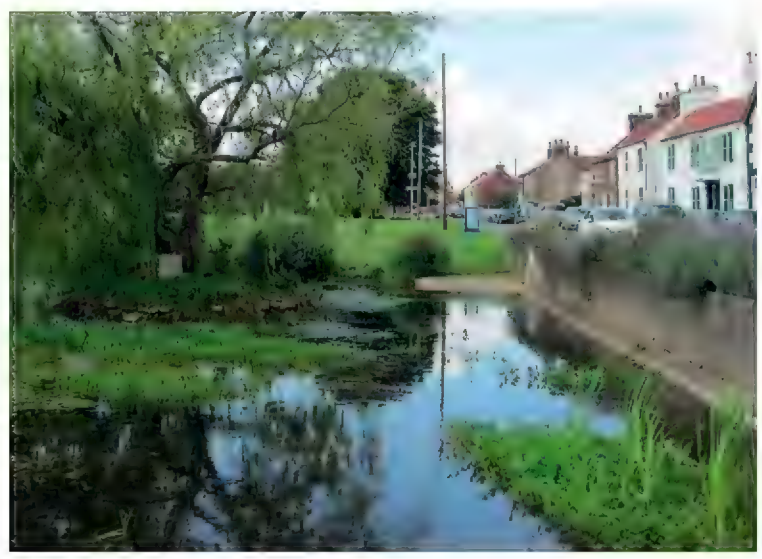

Figure 6. Cranswick, August 2021. There is clear water and a diversity of introduced submerged, floating-leaved and emergent aquatic plants; these include (centre) Water-soldier, (front left) Broad-leaved Pondweed, (front right) Bogbean and Bulrush.

In summer 2021 it was obvious that planting and water gardening are widespread in East Yorkshire village ponds (Figures 4, 5 & 6). There were emergent plants that clearly had been introduced; sometimes on marginal berms behind wooden boards, in wooden planters, in coir rolls, or in wire cages meant to exclude waterfowl. For example:

Greater Pond-sedge, Pendulous sedge, and Bulrush along the west margin at North Dalton; probably also planted here are Common Reed and Yellow Iris.

Sedge beds, 2-5m wide, at the west end and south-east corner at Wetwang; these have Greater and Lesser Pond Sedge, Yellow Iris, Reed Canary-grass and Soft-rush.

A sedge bed at the south end at Fridaythorpe. This is accessible from a wooden jetty, that complements a handsome timber and glass bus shelter. Plants include Greater and Lesser Pond-sedge, Pendulous Sedge, Reed Canary-grass, Yellow Iris and Purple-loosestrife.

Several small (<1m^2) chicken wire enclosures at Middleton-on-the-Wolds, planted with Yellow Iris and sedges.

In other ponds an eclectic community of many plants, some unusual in the district, indicates that there has been planting. This is so at the smaller pond at Bishop Burton, where 10 aquatic plants were found. These included Sweet-flag and Lesser Bulrush, which are unlikely to have reached the site without help. It is most obvious at Cranswick, where 19 aquatic plants were found, many being obvious introductions. Online photographs from 2008 and 2009 (Anon., undated) show an intensively managed amenity pond with a concrete path around the margin and hard sloping banks that appear to consist of cobbles set in cement. One photograph from September 2009 shows maintenance underway with the pond emptied and devoid of all aquatic vegetation.

Since then, there has been major change at Cranswick. The hard concrete path and edges have been removed and the pond is managed to benefit wildlife. In summer 2021 there were soft earthen margins and mown grass surrounds; only the north side, along the road, retained its hard edge. Aquatic vegetation was abundant. Submerged and floating-leaved plants likely to be deliberate introductions were Rigid Hornwort, Curly Waterweed, Broad-leaved Pondweed, Water-soldier and a White Water-lily cultivar. Emergent water plants, probably deliberately introduced, included Water-plantain, Marsh-marigold, Common Spike-rush, Water Horsetail, Yellow Iris, Water Mint, Bogbean, Greater Spearwort and Bulrush. Also, some wetland and waterside plants had probably been planted in the margin; these included Galingale, Meadowsweet and Water Figwort. Additionally, there were inconspicuous aquatic plants that may have been inadvertently introduced along with the intended introductions, for example Ivy-leaved Duckweed and Small Pondweed. Few, if any, of the plants now found are likely to be survivors of an earlier flora; possible exceptions are Common Duckweed and Creeping Bent. Nevertheless, notwithstanding the artificiality of the flora, the Cranswick pond is an excellent site at which to observe aquatic plants, some of which, like Water-soldier and Bogbean, are uncommon in the county.

Discussion

The 38 aquatic plants found in 2021 (Table 2, p186) are, with a few exceptions, native to East Yorkshire. They are plants that, over millennia after the ice retreated, became part of the post-glacial, water and wetland flora of the region. They were still to be found in East Yorkshire in the 19th century (Robinson, 1902). At village ponds, however, it is likely that the native aquatic flora was essentially lost during centuries of intensive and continuous use by people and their livestock. A modicum of disturbance can benefit plants around ponds (Chatters, 1996) but excessive disturbance is detrimental. This is likely with emergent plants that are readily grazed and trampled by watering livestock. Hence the late 19th and/or early 20th century photographs that show open and bare margins of short grass or trampled mud with apparently no aquatic plants; for example, at Fimber, Fridaythorpe, Huggate and Wetwang (Austin *et al.*, 2001; Neave & Neave, 2008; Lunn, 2009; Sharpe & Foster, 2011). The cessation of use for water supply in the early 20th century and the fencing-off of ponds from their surroundings presented the opportunity for recolonization by aquatic plants. The present-day aquatic vegetation probably represents a mixture of plants that have colonised naturally and those that have been planted for their amenity value.

There is overlap between the aquatic plants found in the village ponds in 2021 (Table 2) and those found in Wolds dew ponds in 1995 (Chicken, 1996). Fifteen of the aquatic plants found in dew ponds were also found in the village ponds. The dew pond flora presumably largely colonised following the cessation of their intensive use by livestock in the 20th century, when piped water became available in the fields and arable farming became more prevalent than grazing. Colonization of dew ponds and village ponds were, therefore, perhaps parallel processes following the end of their water supply role.

Waterfowl are a likely natural source of plants to village ponds. Figuerola & Green (2002) reviewed how seeds and other plant propagules are carried by water birds. Preston (1995) describes dispersal of pondweeds by waterfowl, which may explain colonization of ponds at Bishop Burton and Warter by Curled Pondweed. Some ponds have inflows from ditches that might carry seeds or plant fragments. Additionally, any pondside engineering work that involved the use of infill or other material sourced from off-site might have brought in seeds or vegetative material. There might also have been surreptitious introductions of unwanted plants from garden ponds.

When plants were found that are rare or scarce in East Yorkshire they had likely been planted. Thus, of the plants found that appear on the *South-east Yorkshire (vc61): Rare Plant Register* (Middleton & Cook, 2015), Water-soldier, Bogbean, Greater Spearwort and Galingale at Cranswick were surely planted and Small Pondweed at Cranswick might have piggy-backed with other introductions.

Amongst the alien aquatic plants encountered, Sweet-flag, in both the Bishop Burton ponds, is relatively long-standing in England. It is a fragrant plant, used medicinally and as a strewing herb, probably introduced into Europe in the 16th century and known in England by 1668 (Preston & Croft, 1997). It was in East Yorkshire in ponds at Risby near Beverley by the late 18th century (Teesdale, 1800). It was likely planted at Bishop Burton. Canadian Waterweed, found at Fimber, was introduced into England in the mid-19th century and was naturalised and widespread in East Yorkshire by the end of that century (Robinson, 1902). More problematic are Curly Waterweed, originally from South Africa and found at Cranswick, and the notoriously invasive New Zealand Pigmyweed found at Fimber. Both colonised English fresh waters in the mid-20th century (Preston & Croft, 1997). Their sale in the UK is banned but they are widely established in garden ponds and continue to colonise other fresh waters. They reached East Yorkshire by the late 20th century. Curly Waterweed was at Skipwith Common in 1982 (Crackles, 1990) while New Zealand Pigmyweed was in a clay pit near Hornsea in 1996 (Linton, 1999), in the pond at Fimber where I found it in in 2009, and at North Cave Wetlands in 2010 (Boatman & Goulder, 2011).

There was much variation between ponds in their size, surroundings and management. The wide range shown by the number of aquatic plants and their abundance (Table 1, p182) was notable. In some ponds it was apparent why water plants were thriving or otherwise, whereas this was not so in other ponds. Water gardening and associated introductions were obviously important in some ponds. However, there are several other factors that may contribute to the success or dearth of aquatic plants that can be explored.

Waterfowl. Most of the ponds had ducks and some had geese (Table 1). Although these are potentially beneficial to aquatic plants through helping dispersal, they also graze on aquatic vegetation and can substantially reduce its biomass. A meta-analysis by Wood *et al.* (2012), that used data from many sites and published studies, showed a significant relationship between reduction of plant biomass and waterfowl density. East Yorkshire ponds that had high densities of waterfowl tended to have little aquatic vegetation - and there was especially a dearth of submerged and floating-leaved plants. Thus, no aquatic plants were found at Burton Agnes, which had c.130 ducks and geese in May 2021 and at Little Driffield, which had c.70 ducks, only a small patch (barely 1m^2) of Water Mint was found. At some ponds, however, there appeared to be better coexistence between plants and waterfowl. For example, at Fridaythorpe and Walkington the planted sedges survived appreciable duck populations, while Curled Pondweed, Common Duckweed, and Sweet-flag did well in the larger pond at Bishop Burton notwithstanding many ducks and geese. Counts of waterfowl made on only two visits to each pond were of limited value because numbers are likely to vary with season and time of day. Nevertheless, overall it is likely that waterfowl adversely affected aquatic plants. The number of species of aquatic plants in each pond was negatively correlated with number of birds per unit pond area while ∑abundance scores for aquatic plants was negatively correlated with both number of birds and with the number per unit area (Table 4, p192).

Size of ponds. It might be expected that larger ponds have greater habitat diversity and hence might support more species of aquatic plants. Thus Oertli *et al.* (2002) found that species richness increased with pond size in 80 ponds in Switzerland. However, the correlation was weak with only about 7% of variation being explained by pond area. Linton, in her study of 57 East Yorkshire ponds,

found no correlation between species richness or conservation value of aquatic plants and pond size (Linton & Goulder, 2000). Similarly, in the present study of 21 village ponds, no correlations were found between number of aquatic plant species or their ∑ abundance scores and pond size (Table 4). This suggests that, at these ponds, variables other than pond size controlled aquatic plants. It might be relevant, however, that the Swiss ponds surveyed by Oertli *et al*. were somewhat larger (mean area 0.88ha) than those in my study (mean 0.13ha), hence their larger ponds may have allowed more scope for habitat diversity.

Table 4. Relationships of aquatic plants with pond size and number of waterfowl[†]

Variables		R_s
Number of aquatic plant species	Area of pond	NS
	Number of waterfowl	NS
	Number of waterfowl per unit area	-0.433**
∑abundance scores for aquatic plants	Area of pond	NS
	Number of waterfowl	-0.371*
	Number of waterfowl per unit area	-0.457**

R_s=Spearman's rank correlation coefficient; NS=*P*>0.1, *=P<0.1, **=P<0.05, *n*=21.
[†]Waterfowl numbers used were maximum counts of ducks plus geese

Shading by trees. Aquatic plants are discouraged by tree shading. Thus, Sayer *et al*. (2012) showed by survey of around 40 farm ponds in Norfolk that management that included reduction of shading by trees enhanced the abundance and diversity of aquatic plants. Also, Biggs *et al*. (1994), who studied ponds in Oxfordshire, observed that shaded ponds may be dark and gloomy with few aquatic plants. Notwithstanding this, however, they pointed out that some aquatic plants are, to a degree, shade tolerant, e.g., Yellow Iris. They also stressed that fallen leaves and woody debris associated with overhanging trees, benefit some invertebrates. Some of the East Yorkshire ponds have become heavily shaded by self-seeded (often Sycamore) and/or planted trees (often Weeping Willow *Salix* sp.) and have few aquatic plants. For example, Burton Agnes, Garton-on-the-Wolds and Lund where Yellow Iris and Creeping Bent were at most the only aquatic plants found (Table 2, p186). In contrast ponds with abundant water plants tended to be unshaded, for example the smaller pond at Bishop Burton and at Cranswick.

Water quality. The aquatic plants found at the 21 village ponds are largely ones that tend to be associated with nutrient-rich conditions. The mean Ellenberg's nitrogen indicator value (E_N) for the 36 aquatic plants found and identified to species level, and with an E_N value allocated, equalled 6.02 (sd=1.23). E_N values of five or more indicate plants associated with intermediate or rich conditions (Hill *et al.*, 1999). Moreover, outlying plants with E_N=3 or 4 tended to be obvious introductions, e.g., Broad-leaved Pondweed, Marsh Marigold, Common Spike-rush, Water Horsetail and Bogbean at Cranswick. Hence the ponds probably tended to high availability of inorganic nutrients. That the ponds are relatively rich is supported by Linton (1999) who analysed water from six of the ponds included in my study (Garton-on-the-Wolds, Kilham, South Dalton, Warter and both ponds at Bishop Burton). She sampled in January-February 1996 and found that in these six ponds PO_4-P ranged from <20-1060 mg l^{-1}, NH_4-N from 270-8360mg l^{-1}, and NO_3-N from 48-1300mg l^{-1}. Waterfowl and run off are likely sources of nutrients. In some ponds high nutrient availability may have promoted phytoplankton growth to the extent that submerged vascular plants were supressed by lack of underwater light. Additionally, many of the ponds receive run off from adjacent roads, which

potentially brings in road salt, dust and oil. Whether such pollution adversely affected aquatic plants is not known.

It is encouraging that the 21 village ponds studied, now without their water-supply role, are cared for as amenity ponds. Although some have few or no water plants, probably largely because of tree shading and waterfowl, others have significant aquatic vegetation. Notwithstanding the newness and often artificiality, of their plant communities they have wildlife value. Planted sedges at Fridaythorpe, Walkington, and Wetwang are positive features. Accessibility, and a wide range of aquatic plants at Cranswick and the smaller pond at Bishop Burton make these good sites for the observing and studying of water plants. Cranswick is excellent for pond dipping.

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Plant find a first for the Yorkshire Dales and British Isles

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Unexpectedly in adult life you discover a sibling you never realized you had, or you are an avid orchid hunter who finds a species new to science high in the tree canopy of a remote equatorial rainforest. Imagine the elation such a moment would furnish, then wind the clock back to 2019 and transfer the setting to the Yorkshire Dales.

It was here in mid-April, that I was engaged in another day of field botany, gleaning records for the Botanical Society of Britain and Ireland in the run-up to the publishing of the new national plant atlas of Great Britain. Aware that December 2019 was the deadline for submitting records, like many other botanists the length and breadth of Britain I was pulling out all the stops, doing my bit for citizen science.

I have been exploring the Yorkshire Dales for fifty years. It is my principal stomping ground, one I have known as walker, potholer, climber, cyclist and in recent years, keen amateur botanist. On the 19 April a long day of botanizing was drawing to a close, when as I neared Clapham, I decided on a whim to turn in to the village. It is an especially leafy milieu, so I decided to have a poke about to see what, if anything, might reveal itself.

I finished my investigations for the day with a look at a patch of unkempt ground where rank growths were dominated by nettles and brambles, but not much else. This separates the main village car park from a footpath I have followed on many occasions to the neighbouring village of Austwick. I was on the point of throwing in the towel for another day when, toward the village WC building I came upon an untidy patch of leaves I was unable to recognize. Hunting about turned up more a few metres removed.

It was a leafy mystery and intriguing as these matters so often are. And yet identification of the plants was not forthcoming until three months later, when another BSBI botanist found more of the same plants thriving on the east bank of the beck that bisects the village. By this time it was mid-summer and the plants were mature and in full bloom. Only after the on-line *Manual of the Alien Plants of Belgium* had been consulted were the plants finally verified to be the Blue Sow-thistle *Cicerbita macrophylla* subsp. *macrophylla*. I returned to the location of 'my' plants and saw immediately that they were indeed identical - thus catapulting the April discovery to the fore as a completely new find for Britain! I could not believe my good fortune.

The Clapham plants are significantly different from the Blue Sow-thistle (subsp. *uralensis*) commonly found throughout Britain. Subspecies *uralensis*, which is also present in and around Clapham, is a delicate plant, has smaller basal leaves and is only slightly hairy. *Macrophylla* on the other hand, has a more robust growth pattern. It can reach as tall as three metres, the basal leaves have ludicrously large terminal lobes and the inflorescence bears a dense fuzz of glandular hairs. Overall a far more statuesque and impressive plant.

It is always exciting to find a plant new to an area but to find such a handsome one never before

recorded anywhere in the British Isles is a boost to confidence and quite a thrill. Of course, the find begs questions concerning the plant's provenance. Subspecies *macrophylla* is a perennial native to N and NE Turkey, the Caucasus region and N Iran, so how, one might ask, does it come to be thriving in the Dales? Perhaps the plants' presence is not so surprising when one considers that Clapham was home to the famed nineteenth century botanist and international plant collector, Reginald Farrer (1880 – 1920).

Left: The Blue Sow-thistle plants in their beckside setting.

Right: Inflorescence clearly showing the dense glandular hairs peculiar to subsp. *macrophylla.*

Photos: H.Beck

Farrer travelLed Asia and the Orient collecting extensively and returned to his home, Ingleborough Hall, with all manner of exotic specimens for his private collections. Many of the plants we see in Clapham's Ingleborough grounds, *Sassa palmata, Petasites japonicus* and *Gunnera tinctoria*, for instance, are some of his introductions. Was the Blue Sow-thistle also the result of one of his collecting expeditions? Did it escape years ago from his private garden and establish itself in the wild?

A conversation with Philip Farrer of Clapham has revealed that the village car park is sited on land once occupied by the Ingleborough Hall greenhouses, lending weight to the theory that this sow-thistle was introduced by Reginald. We may never know for certain; however what is fact is that Clapham is now firmly placed on the botanical map as the repository for a plant so far unknown anywhere else in the British Isles.

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Geological Field Note: 'Whin Sill' Erratic in Leven village

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During the YNU VC63 meeting to Leven on 25 June 2022, CH noticed a large brown, rectangular, domed, water-worn boulder embedded in the grass verge of South Parade, adjacent to the frontage of the fine brick built early 19th century Grade II Listed Building named Westfield House (TA 103453) (see Figure 1). In this Hull valley landscape with no exposed solid geology or underlying strata which could have produced this rock type, this incongruous object, unless brought by human agency, seemed likely to be an 'Erratic' brought by glacial action during the Quaternary ice ages. It is probably not in its original position and was likely moved there to protect the corner of the house from vehicle damage. There are several large quarries (some disused and some still active) in the area around Leven extracting glacial and post-glacial deposits.

Figure 1: The Leven 'Whin Sill' boulder adjacent to the English bond brickwork of Westfield House (TA 103453). Photo by Mike Horne.

Visual inspection by MH of the Hull Geological Society showed the boulder to be a medium grained basic igneous rock and the most likely would be 'Whin Sill', a dolerite from northern England. To obtain a more accurate identification a geologist would need to remove a sample to see an unweathered surface and make a thin section. Even then it is not always possible to link the erratic to its original source. Some erratics are readily identifiable and come from a single locality, such as Shap Granite and Larvikite, for others the identification has to remain more generic.

At the end of the Carboniferous and the beginning of the Permian geological periods (about 301-294 million years ago), tectonic plate movements (the Variscan orogeny) created four surges (swarms) of volcanic activity intruding magma between existing rock strata and erupting at surface via fissures. On cooling it solidified into the tough crystalline doloritic rock referred to as Whin Sill. Since quite large specimens of Whin Sill origin feature in the glacial boulder clays of Holderness and east Yorkshire, examples in North Cave (SE8932) and Cottingham (TA0432)

being used as kerbstones (Anon, 1894) and others in North Ferriby (anon, 1896) it is likely its occurrence in Leven is similarly via glacial progression from the north.

Recording, mapping and identifying glacial erratics became popular with the *Yorkshire Naturalists' Union* and its affiliated societies in the late 19th century, the YNU forming *The Yorkshire Boulder Committee* to organise this work which reported in the *YNU Transaction*s and *The Naturalist* from 1894 to 1905. Also *The East Yorkshire Boulder Committee* of the Hull Geological Society reported in their *Transactions* from 1893 to 1909 and *Humberside Geologist* 1987 to 2021. By this means it has been possible to trace the origins and routes of glaciers across Ice Age Yorkshire.

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Checklist of the lichens and lichenicolous fungi of the Malham Tarn area

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Introduction

This annotated checklist is essentially an update of the 'Lichen flora of the Malham Tarn area' by Seaward and Pentecost (2001). This was felt necessary in the light of many new finds on subsequent field trips, particularly the British Lichen Society Workshop on 'Limestone Lichens' held at the Malham Tarn Field Centre in 2017 (cited as BLS Workshop 2017 in the following checklist), which included a detailed investigation of limestone walls (Pentecost *et al*. 2017); it should also be noted that there has been an unprecedented number of nomenclatural changes since the publication of Seaward and Pentecost (*loc. cit*.).

The Malham Tarn area has attracted natural historians for four centuries and since 1947 the Field Studies Council's Field Centre has proved to be a focal point for their studies. The Centre is on the Pennine Way and surrounded by the 147-hectare National Nature Reserve, which in turn forms part of the Yorkshire Dales National Park. The area covered for this checklist is strictly within a 5 km radius of the Centre (see Figures 1 & 2 in Seaward & Pentecost, *loc. cit*.); this area (78.5 km^2) encompasses Malham Tarn, Malham Cove, Gordale Scar, the summit of Fountains Fell and Malham village. Altitude ranges from 220m to 668m but it is mostly within the range 400m to 500m. Phytogeographically, in terms of the national recording schemes, the designated area overlaps four 10 x 10 km grid squares (namely SD/86, 87, 96 & 97); it is mostly open moorland and pasture, underlain by several kinds of sedimentary rocks, the most important floristically being Carboniferous Limestone (covering 85% of the area) which is exposed in many places as cliffs ('scars'), pavements or glacial erratics.

Included within the many eminent botanists attracted to Malham are a large number who have shown a particular interest in its lichen flora. Early lichen records are attributable to Richard Richardson, John G. Baker, William Borrer, Benjamin Carrington, Samuel Hailstone, Thomas Hebden, William Hudson, Frederic A. Lees, John Nowell, Abraham Shackleton, Abraham Stansfield, William West and John Windsor. Hailstone's Malham records appear in Whitaker (1805) but many are unlocalized, being expressed as occurring in 'the Craven area'. Very little lichenology was undertaken at Malham during the first half of the last century but records of Malham lichens based on 19th Century recording are to be found in Smith (1918, 1926). The Yorkshire Naturalists' Union held eight field meetings based on Malham in 1883, 1890, 1910, 1925, 1948, 1999, 2005 and 2011 but only the last three contain lichen records (Seaward & Henderson 2001, 2011; Henderson, 2006). The first published lichen checklist for Yorkshire contains sketchily presented localized records (Watson, 1946). However, the lichen courses first run at Malham Tarn Field Centre by Arthur E. Wade in the late 1950s added considerably to the revival of lichenology in this country, and more particularly led to the formation of the British Lichen Society. Many of those who attended these innovative and stimulating courses were to become key figures in British lichenology. At this time, Charles Sinker, the Warden of the Centre, showed great interest in lichens, his work contributing to the first published list for the Malham area (Sinker, 1960).

Peter W. James added many records, mainly through his week-long field courses at the Field Centre in the 1960s; one of his many students, Gordon G. Graham, made significant additions to the list of lichen records. Oliver L. Gilbert's appointment as Assistant Warden at the Field Centre provided the opportunity for him to study the lichens, including his interesting work on the mural flora of Tarn House (Raistrick & Gilbert, 1963). MRDS frequently visited the area once he had taken up a lecturing position in Yorkshire, acting first as tutor to his own students from 1973 to 1976 and running annual lichen courses for the Field Centre from 1977 to 1989. From 1991 onwards, AP has annually run the Field Centre lichen courses.

Further biographical, bibliographical and herbarium details in respect of the lichenological activities of most of the above are to be found in Seaward (1987) and Seaward and Pentecost (2001), and a checklist of Yorkshire lichens is provided by Seaward (2021). Detailed information on the topography and habitats of the study area are also provided in Seaward and Pentecost (loc. cit.); little has changed in the past 20 years, but it should be noted that there has been a decline in some mature tree species (e.g. *Fraxinus*) and the long-range dispersal of nitrogen compounds due to farming practices has resulted in an increase in nitrophytic lichens. On the other hand, although there have been noticeable extinctions (some of which are listed at the end of the checklist below), many lichens have extended their range and frequency and there have been numerous additions to the lichen flora due to environmental changes during the past two decades.

Checklist

Nomenclature is mainly according to Smith *et al*. (2009) but there have been many changes to some genera, particularly *Bacidia*, *Caloplaca*, *Collema, Lecanora, Leptogium, Opegrapha, Pertusaria* and *Toninia* in the past two decades; therefore, numerous names published in Seaward and Pentecost (*loc. cit.)* are provided as synonyms. First recorder is listed with a date but this often refers to a publication which will usually post-date the field record. Only

old records which can be definitely localized within the defined area (i.e. within 5km of the Malham Tarn Field Centre) have been included; therefore, those given as occurring in "Craven" by earlier authors, many of which, no doubt, occur in the defined area, have been excluded. 383 lichen taxa and 17 lichenicolous fungi [*] and non-lichenized taxa traditionally recorded by lichenologists [**] have been recorded from the study area, compared to 886 and 103 respectively for Yorkshire as a whole (Seaward, 2021); however, several taxa have not been recorded from the study area for several decades and may be extinct. Further evidence is also required to support the past and/or present status of 30 taxa listed at the end of the checklist.

Absconditella trivialis (Willey ex Tuck.) Vězda FR: BLS Workshop 2017. Terricolous (e.g. Mine Rakes, High Mark); occasional.

Acarospora cervina A. Massal. FR: N. Chadwick 2014. On moderately exposed limestone; locally frequent. Similar to *A. glaucocarpa* and perhaps merely a form of it.

A. fuscata (Schrad.) Th. Fr. FR: Sinker 1955. On Tarn House and gritstone generally, particularly those influenced by birds; locally frequent.

A. glaucocarpa (Ach.) Körb. FR: F. Bloom 1963. Occasional on calcareous rock, as recently seen in Tarn House woods.

A. veronensis A. Massal. FR: Pentecost 1999. On acidic mineral-rich spoil; rare.

Acrocordia conoidea (Fr.) Körb. FR: Shackleton &/ or Hebden (in Rotheray 1900). Widespread and common on steep sheltered hard limestones and dry-stone walls; frequent.

A. gemmata (Ach.) A. Massal. FR: Pentecost 2011. On *Acer* near Rock Cottage; scarce.

* *Adelococcus alpestris* (Zopf) Theiss & Syd. FR: Gilbert 2003. On *Acarospora glaucocarpa*; rare

Agonimia globulifera Brand & Diederich FR: BLS Workshop 2017. On limestone and mosses (e.g. nr Watlowes, Chapel Fell); scarce.

A. tristicula (Nyl.) Zahlbr. FR: Graham 1965. On mosses over limestone, usually in sheltered locations such as the Tarn House Cutting; widespread and common, occasionally fertile.

Alyxoria culmigera (Lib.) Ertz (syn. *Opegrapha herbarum* Mont.) FR: Fryday 1990. On *Acer* and *Fraxinus*; scarce, but recently seen near Keeper's Cottage and at Ha Mire Plantation.

A. ochrocheila (Nyl.) Ertz & Tehler (syn. *Opegrapha ochrocheila* Nyl.) FR: Fryday 1990. On *Fraxinus*; rare and not seen recently.

Alyxoria varia (Pers.) Ertz & Tehler (syn. *Opegrapha varia* Pers.) FR: Carrington (in Miall & Carrington 1862). Occasional on mature and shaded tree bark, but no recent records.

Amandinea punctata (Hoffm.) Coppins & Scheid. (syn. *Buellia punctata* (Hoff.) A.Massal.) FR: Shackleton & Hebden 1893. On *Fraxinus* and fence posts; no post-2000 records, but perhaps overlooked.

Anisomeridium biforme (Borrer) R.C. Harris FR: Lees 1888. On *Acer*; rare, with no records since 1965.

Arctoparmelia incurva (Pers.) Hale (syn. *Parmelia incurva* (Pers.) Fr.) FR: Seaward 1977. On exposed Millstone Grit; rare.

Arthonia atra (Pers.) A. Schneid. (syn. *Opegrapha atra* Pers.) FR. Pentecost 2022. Frequent on *Acer* at Ha Mire Plantation.

A. fusca (A. Massal.) Hepp (syn. *A. lapidicola* auct.) FR: Pentecost 2014. Occasional on sandstone (e.g. nr Watlowes, High Mark) and sills of Tarn House.

A. calcarea (Turner ex Sm.) Ertz & Diederich (syn. *Opegrapha calcarea* Turner ex Sm.; *O. saxatilis* sensu auct. brit) FR: Carrington (in Mudd 1861). On dry, sheltered limestone; uncommon.

* *A. fuscopurpurea* (Tul.) R. Sant. FR: Pentecost 2012. On *Peltigera hymenina* on Tarn Fen; rare. New to Yorkshire.

A. radiata (Pers.) Ach. FR: Carrington (in Miall & Carrington 1862). On many deciduous trees with smooth bark, especially on small twigs of *Fraxinus*; formerly rare, but now widespread.

** *Arthopyrenia analepta* (Ach.) A. Massal. (syn. *A. lapponina* Anzi) FR: James 1970. On young *Fraxinus* and *Quercus*; scarce, and no recent records.

Aspicilia caesiocinerea (Nyl. ex Malbr.) Arnold (syn. *Circinaria caesiocinerea* (Nyl. ex Malbr.) A. Nordin, Savić & Tibell) FR: Graham 1965. On nutrient-enriched sandstones; scarce.

A. calcarea (L.) Körb. (syn. Circinaria calcarean (L.) A. Nordin, Savić & Tibell) FR: West 1883. On the top of limestone walls and outcrops frequented by birds; common.

A. contorta (Hoffm.) Kremp. ssp. *contorta* (syn. *Circinaria contorta* (Hoffm.) A. Nordin, Savić & Tibell) FR: Carrington (in Miall & Carrington 1862). Widespread, especially on wall tops and prominent outcrops, but less common than *A. calcarea.*

A. contorta ssp. *hoffmanniana* S. Ekman & Fröberg

(syn. *Circinaria hoffmanniana* (Hoffm.) S. Ekman & Fröberg ex R. Sant.) FR: BLS Workshop 2017. On the tops of limestone walls (e.g. Highfolds, Chapel Fell); occasional.

A. radiosa Poelt & Leuckert (syn. *Lobothallia radiosa* (Hoffm.) Hafellner) FR: Seaward 2011. On exposed calcareous rock; rare.

Bacidia rubella (Hoffm.) A. Massal. FR: Carrington (in Lees 1888). Corticolous; not seen since c. 1940.

Bacidina delicata (Larbl. ex Leight.) V. Wirth & Vězda (syn. *Bacidia delicata* (Larbl. ex Leight.) Coppins) FR: James 1970. On mosses near Malham Tarn; rare, and no recent records.

B. inundata (Fr.) Vězda (syn. *Bacidia inundata* (Fr.) Körb.) FR: Graham 1965. On acidic rocks in streams; rare, and no recent records.

B. modesta (Zwackh ex Vain.) S. Ekman (syn. *B. sulphurella* (Samp.) M. Hauck & V. Wirth; *Bacidia arnoldiana* auct. p.p.) FR: Seaward 1985. On *Fraxinus*; rare and no post-1990 records.

Baeomyces rufus (Huds.) Rebent. FR: Sinker 1955. On eroding soils in banks and on weathered sandstone (e.g. Highfolds, High Mark); uncommon.

Belonia nidarosiensis (Kindt) P.M. Jörg. & Vězda. FR: James 1970. On dry vertical surfaces of limestone in outcrops and walls, including Tarn House; frequent, and fertile in Morrison Cutting.

Bilimbia lobulata (Sommerf.) Hafellner & Coppins (syn. *Toninia lobulata* (Sommerf.) Lynge) FR: Sinker 1955. On cushion mosses on damp wall tops (e.g. Highfolds) and outcrops; locally frequent.

B. sabuletorum (Schreb.) Arnold (syn. *Bacidia sabuletorum* (Schreb.) Lettau) FR: Sinker 1955. Widespread and frequent on bryophytes over sheltered limestones.

Blennothallia crispa (Huds.) Otálora, P.M. Jørg. & Wedin (syn. *Collema crispum* (Huds.) F.H. Wigg FR: Graham 1965. On damp sheltered limestone and more frequently on mortared walls.

Botryolepraria lesdainii (Hue) Canals *et al.* (syn. *Lepraria lesdainii* (Hue) R.C. Harris) FR: James 1965. On deeply shaded limestone, often in crevices; reasonably widespread, including Tarn House Cutting.

Buellia aethalea (Ach.) Th. Fr. FR: Gilbert 1963. On acidic stonework; occasional

B. griseovirens (Turner & Borrer ex Sm.) Almb. FR: Pentecost 2010. On tree bark and lignum on Tarn Fen; rare, but easily overlooked for some forms of sorediate *Mycoblastus* species.

B. ocellata (Flot.) Körb. FR: Shackleton & Hebden 1893. A species similar to, and sometimes occurring with, *B. aethalea*; not seen since the first record, but perhaps overlooked.

Caeruleum heppii (Mudd) K. Knudsen & Arcadia (syn. *Myriospora heppii* Nägeli) FR: Lovering 2017. On calcareous scree above Malham Cove; rare, but easily overlooked.

Calicium viride Pers. FR: Fryday 1990. On *Quercus*; not seen since first recorded.

Callome multipartita (Sm.) Otálora, P.M. Jørg. & Wedin (syn. *Collema multipartitum* Sm.) FR: Shackleton & Hebden 1893. On exposed limestone; scarce.

Caloplaca aurantia (Pers.) Hellb. (syn. *Variospora aurantia* (Pers.) Arup, Frödén & Søchting) FR: Carrington (in Miall & Carrington 1862). On well-lit limestone, such as Highfolds; scarce.

C. cerina (Hedw.) Th. Fr. (incl. var. *chloroleuca* (Sm.) Th. Fr.) FR: Carrington (in Miall & Carrington 1862). On mosses over limestone and on *Sambucus*; not seen since 1970.

C. cerinella (Nyl.) Flagey (syn. *Athallia cerinella* (Nyl.) Arup, Frödén & Søchting) FR: Pentecost 2011. On *Salix* twigs in Tarn Fen; uncommon.

C. chalybaea (Fr.) Müll. Arg. (syn. *Pyrenodesmia chalybaea* (Fr.) A. Massal.) FR: Shackleton & Hebden 1893. On bird-eutrophicated limestone wall-tops and exposed surfaces, often with *Aspicilia calcarea* with which it can easily be confused; frequent.

C. chrysodeta (Vain.) Dombr. (syn. *Leproplaca chrysodeta* (Vain. ex Räsänen) J.R. Laundon) FR: Gilbert 1963. On dry sheltered and steep limestones; locally frequent.

C. cirrochroa (Ach.) Th. Fr. (syn. *Leproplaca cirrochroa* (Ach.) Arup, Frödén & Søchting) FR: Sinker 1955. On larger and steep sheltered limestone cliffs; locally frequent.

C. citrina sensu lat. FR: Hailstone (in Lees 1888). Common on the dry sides of buildings, sometimes on nutrient-enriched bark, and less common on limestone; sometimes fertile.

C. crenularia (With.) J.R. Laundon (syn. *Blastenia crenularia* (With.) Arup, Frödén & Søchting) FR: Miall 1865. On sandstones in walls or erratics with some base enrichment; scarce, and no post-1999 records.

C. decipiens (Arnold) Blomb. & Forss. (syn. *Calogaya decipiens* (Arnold) Arup, Frödén & Søchting) FR: Seaward 1977. On dusty calcareous rock and stonework; rare, no recent records.

C. dichroa Arup (*Flavoplaca dichroa* (Arup) Arup, Frödén & Søchting) FR: BLS Workshop 2017. On tops of limestone outcrops and boulders where birds perch; frequent. Formerly mistaken for *C. citrina*, a species with smaller soredia found in less exposed sites.

C. flavescens (Huds.) J.R. Laundon (syn. *Variospora flavescens* (Huds.) Arup, Frödén & Søchting) FR: West 1883. Common on nutrient-enriched limestone outcrops and walls; often fertile.

C. flavocitrina (Nyl.) H. Olivier (syn. *Flavoplaca flavocitrina* (Nyl.) Arup, Frödén & Søchting) FR: BLS Workshop 2017. On steep limestone rock near Watlowes; rare, but overlooked.

C. flavovirescens (Wulfen) Dalla Torre & Sarnth. FR: Carrington (in Miall & Carrington 1862). On flat limestone slabs and base-enriched sandstone; scarce, but seen on Chapel Fell in 2017.

C. holocarpa sensu lat. FR: Sinker 1955. Occasional on limestones and mortared walls.

C. limonia Nimis & Poelt (syn. *Flavoplaca limonia* (Nimis & Poelt) Arup, Frödén & Søchting) FR: BLS Workshop 2017. On stonework of Tarn House; scarce. Similar to *C. citrina* and probably overlooked for that species in the past.

C. marmorata (Bagl.) Jatta (syn. *Xanthocarpia marmorata* (Bagl.) Arup, Frödén & Søchting) FR: Coppins 1967. Occasional on limestone (e.g. High Mark).

C. oasis (A. Massal.) Szatala (syn. *Flavoplaca oasis* (A. Massal.) Arup, Frödén & Søchting) FR: BLS Workshop 2017. On shaded limestones at Highfolds; status currently uncertain, as some earlier records named as *C. holocarpa*.

C. ochracea (Schaer.) Flagey FR: Hailstone (in Mudd 1861). On well-lit limestone outcrops (e.g. Highfolds Scar); occasional.

C. saxicola (Hoffm.) Nordin (syn. *Calogaya saxicola* (Hoffm.) Vondrák) FR: James 1965. On calcareous stonework; scarce, and no post-1999 records.

C. variabilis (Pers,) Müll. Arg. (syn. *Pyrenodesmia variabilis* (Pers.) A. Massal.) FR: Sinker 1955. On nutrient-enriched limestone; rare.

C. xantholyta (Nyl.) Jatta (syn. *Leproplaca xantholyta* (Nyl.) Harm.) FR: Wade 1955. On dry steep and sheltered limestones, including Tarn House Cutting, occasional.

Candelaria concolor (Dicks.) Stein FR: James 1964. Rare on *Acer*; an indicator of nutrient enrichment.

Candelariella aurella (Hoffm.) Zahlbr. FR: James 1970. On cement and mortar, particularly on flat surfaces such as the sills of Tarn House; locally frequent.

C. medians (Nyl.) A.L. Sm. FR: Seaward 1977. On cement and mortar; well developed on part of North Wing of Tarn House, but uncommon.

C. vitellina (Hoffm.) Müll. Arg. FR: Lees 1888. On sandstones, particularly Tarn House, and lignum frequented by roosting birds; locally common.

C. xanthostigmoides (Müll. Arg.) R.W. Rogers (syn. *C. reflexa* auct. brit.) FR: James 1970. On twigs, including trees on Tarn Fen; uncommon, but increasing and indicating nutrient enrichment.

Catapyrenium cinereum (Pers.) Körb. FR: Carrington (in Mudd 1861). On soil among limestone outcrops; rare and no post-1970 records.

Catillaria chalybeia (Borrer) A. Massal. FR: Wade & Clement 1957. On acidic rock subject to some base enrichment; scarce and not reported in recent years, perhaps overlooked.

C. lenticularis (Ach.) Th. Fr. FR: Laundon 1954. On limestone outcrops (e.g. Cowside Beck, Chapel Fell & Highfolds); occasional and perhaps overlooked.

C. nigroclavata (Nyl.) J. Steiner FR: Pentecost 2019. On a gate rail near Keeper's Cottage and *Fraxinus* in Ha Mire Plantation; uncommon, but increasing.

Cetraria aculeata (Schreb.) Fr. (syn. *Coelocaulon aculeatum* (Schreb.) Link) FR: Carrington 1857. On acidic soils, often among *Calluna*; uncommon.

C. islandica (L.) Ach. FR: Sinker 1955. On exposed peat and associated soils around Fountains Fell summit, often with *Vaccinium* and *Rubus chamaemorus*; rare and apparently decreasing. There is an early unconfirmed report from Tarn Moss.

C. muricata (Ach.) Eckfeldt (syn. *Coelocaulon muricatum* (Ach.) J.R. Laundon) FR: Seaward 1977. On thin mineral soils and acidic rock; rare and no recent records.

Chaenotheca ferruginea (Turner) Mig. FR: Seaward 1990. On large boles of *Fraxinus* and *Acer*; rare.

Cladonia arbuscula subsp. *squarrosa* (Wallr.) Ruoss FR: Sinker 1955. On peaty soils; scarce on Tarn Moss. Forms reacting Pd– have occasionally been encountered.

C. cervicornis (Ach.) Flot. FR: Carrington (in Miall & Carrington1862). Occasional on thin soils with some base enrichment.

C. chlorophaea (Flörke ex Sommerf.) Spreng FR: Graham 1965. Occasional on soils and rotting wood (e.g. Tarn Fen). There are several chemotypes that require further study.

C. ciliata var. *ciliata* Stirt. FR: James 1970. On peaty soil of Tarn Moss; scarce.

C. coniocraea (Flörke) Spreng. FR: Sinker 1960. On bark and lignum of a variety of trees; scattered, but locally frequent.

C. crispata ssp. *cetrariiformis* (Delise ex Duby) Vain. FR: Sinker 1955. On peaty soil amongst *Calluna* (e.g. Tarn Moss); occasional.

C. digitata (L.) Hoffm. FR: Seaward 1979. On stumps and bark of fallen trees, especially conifers, and on peat of Tarn Moss; occasional, but rarely in

fruit.

C. diversa Asperges (as *C. coccifera* sensu lat.) FR: Miall 1865. Frequent on peaty soil, especially Tarn Moss and Tarn Fen.

C. fimbriata (L.) Fr. FR: Sinker 1955. On rotting wood, bark, old walls and amongst *Calluna*; locally frequent.

C. floerkeana (Fr.) Flörke FR: Nowell (in Miall & Carrington 1862). On moorland tussocks, peaty soil and old bark; occasional.

C. foliacea (Huds.) Willd. FR: Carrington (in Miall & Carrington 1862). On thin soils of Highfolds Scar; rare and probably decreasing.

C. furcata (Huds.) Schrad. ssp. *furcata* FR: Lees 1888. On peat, such as Tarn Moss; locally frequent.

C. furcata ssp. *subrangiformis* (L. Scriba ex Sandst.) Hennipman FR: BLS Workshop 2017. On thin basic soils on Highfolds Scar; rare.

C. gracilis (L.) Willd. FR: James 1970. On peaty soil amongst *Calluna*; uncommon.

C. humilis (With.) J.R. Laundon FR: Sinker 1955. Occasional on mossy bark and acidic woodland soil, but no post-1999 records.

C. macilenta Hoffm. FR: Sinker 1955. On mossy bark and woodland soils; occasional.

C. ochrochlora Flörke FR: Seaward 1981. On peaty soil and decaying fallen trunks; uncommon.

C. pocillum (Ach.) Grognot FR: Graham 1965. Common on mossy dry-stone wall-tops and occasional on natural mossy exposures, including zinc-rich mine spoil.

C. polydactyla (Flörke) Spreng. FR: Sinker 1955. On peaty soils and rotting wood; locally frequent.

C. portentosa (Dufour) Coem. FR: Sinker 1955. On peaty or other base-poor soils, usually among low vegetation; common on Tarn Moss, less so elsewhere.

C. pyxidata (L.) Hoffm. FR: West 1883. Common on peat and rotting wood of Tarn Fen and Tarn Moss, less frequent elsewhere.

C. ramulosa (With.) J.R. Laundon FR: James 1970. On rotting wood and acidic soil (e.g. Tarn Fen); occasional.

C. rangiformis Hoffm. FR: Sinker 1955. On mossy basic soils over limestone and on zinc-rich mine spoil; occasional.

C. squamosa Hoffm. var. *squamosa* FR: Wade & Clement 1957. On rotting wood, particularly old tree stumps; occasional.

C. squamosa var. *subsquamosa* (Nyl. ex Leight.) Vain. FR: Wade & Clement 1957. On old tree stumps and decaying wood; less common than var. *squamosa*.

C. strepsilis (Ach.) Grognot FR: James 1970. On damp acidic soil; rare and no recent records.

C. subcervicornis (Vain.) Kernst FR: Seaward 1986. On thin pockets of acidic humus in rock crevices; scarce and no recent records.

C. subulata (L.) F.H. Wigg. FR: Sinker 1955. On peaty soils, and stumps and fallen branches of *Larix*; occasional.

C. sulphurina (Michx.) Fr. FR: Graham 1965. On peaty soils and rotting wood on Tarn Fen and Tarn Moss; very local and scarce.

C. uncialis ssp. *biuncialis* (Hoffm.) M. Choisy FR: Windsor 1858. On acidic soil among bryophytes; rarely recorded, but frequent on Fountains Fell.

Clauzadea chondrodes Clauzade & Cl. Roux ex Hafellner & Türk FR: BLS Workshop 2017. On limestones of Highfolds; probably scarce, but easily overlooked.

C, immersa (Hoffm.) Hafellner FR: Hailstone (in Whitaker 1805). On steep and generally sheltered but damp limestone where it may be locally common, especially in woodland.

C. metzleri (Körb.) Clauzade & Cl. Roux ex D.Hawksw. FR: Shackleton & Hebden 1893. On exposed limestone; uncommon.

C. monticola (Ach.) Hafellner & Bellem. FR: Shackleton & Hebden 1893. On steep limestone and on mortared walls of sandstone; frequent.

Cliostomum griffithii (Sm.) Coppins FR: James 1970. Occasional on mature *Fraxinus* and *Acer*; normally in the pycnidial state, so easily overlooked.

Coenogonium luteum (Dicks.) Kalb & Lücking (syn. *Dimerella lutea* (Dicks.) Trevis.) FR: S. Goodwill 2018. On mossy bark of *Alnus* and *Salix* on north shore of Malham Tarn, and more recently on *Salix* in Tarn Fen and on Highfolds; uncommon, but increasing.

C. pineti (Ach.) Lücking & Lumbsch (syn. *Dimerella pineti* (Ach.) Vězda) FR: Fryday 1990. On bark of *Fraxinus*, *Betula*, etc.; occasional, but easily overlooked.

Collema flaccidum (Ach.) Ach. FR: Hailstone (in Whitaker 1805). No records since West in 1883.

C. subflaccidum Degel. FR: Pentecost 2013. In vertical rock crevices on the main scar at Highfolds; rare.

Collemopsidium monense (Wheldon) Coppins & Aptroot (syn. *Pyrenocollema monense* (Wheldon) Coppins) FR: James 1970. On sheltered damp limestone; scarce or overlooked.

Dermatocarpon luridum (Dill. ex With.) J.R. Laundon FR: Richardson 1721 (OXF – Sherardian Herbarium). On soil associated with limestone; scarce.

D. miniatum (L.) W. Mann var. *miniatum* FR: Hailstone (in Whitaker 1805). On steep limestone subject to occasional inundation; frequent, but declining; var. *complicatum* (Lightf.) Hellbom in similar habitats, but less frequent.

Diarthonis spadicea (Leight.) Frisch *et al.* (syn. *Arthonia spadicea* Leight.) FR: Fryday 1990. On *Fraxinus* and *Acer*; occasional in the Tarn woodlands, and possibly increasing.

Dibaeis baeomyces (L.f.) Rambold (syn. *Baeomyces roseus* Pers.) FR: James 1970. On acidic soils and peat; rare with no post-1970 records.

Diploicia canescens (Dicks.) A. Massal. FR: Seaward 1979. On nutrient-enriched limestone, especially buildings such as Tarn House; occasional.

Diploschistes gypsaceus (Ach.) Zahlbr. FR: James 1970. On steep and sheltered limestone; rare with no recent records.

D. muscorum (Scop.) R. Sant. FR: Carrington (in Miall & Carrington 1862). On mosses on wall-tops, initially parasitizing *Cladonia pocillum*; scarce, but recently noted at Watlowes.

D. scruposus (Schreb.) Norman FR: Carrington (in Miall & Carrington 1862). Occasional on sheltered acidic and neutral rocks, but rarely on limestone.

Diplotomma alboatrum (Hoffm.) Flot. FR: Carrington (in Miall 1865). On mortared walls of buildings such as the barn near Shepherd's Cottage, and also on the cliff of Malham Cove; occasional.

Dirina massiliense f. *sorediata* (Müll. Arg.) Tehler FR: James 1969. On steep sheltered limestone (recently seen in abundance on the cliff of Malham Cove), and on N-facing walls; occasional.

Enchylium polycarpon (Hoffm.) Otálora, P.M. Jørg. & Wedin (syn. *Collema polycarpon* Hoffm.) FR: Shackleton & Hebden 1893. On exposed limestone (e.g. Highfolds); occasional.

E. tenax (Sw.) Gray (syn. *Collema tenax* (Sw.) Ach.) FR: Carrington (in Miall & Carrington 1862). In limestone crevices and on mortar; occasional. Two distinctive varieties are also recognized: *C. tenax* var. *ceranoides* (Borrer) Degel. FR: Seaward & Henderson 1999. On compacted base-rich soil; occasional, and *C. tenax* var. *vulgare* (Schaer.) Degel. FR: BLS Workshop 2017. In limestone crevices at Comb Hill; rare.

* *Endococcus caudisporus* J.C. David & Etayo FR: BLS Workshop 2017. On *Collema tenax* var. *tenax* near Watlowes; rare.

* *E. perpusillus* Nyl. FR: BLS Workshop 2017. On *Protoblastenia incrustans* on Highfolds Scar, rare.

* *E. pseudocarpus* Nyl. FR. Blatchley 2017. On *Collema flavovirens* on Highfolds Scar; rare.

Enterographa crassa (DC.) Fée FR: Fryday 1990. On *Fraxinus*, rare, with no recent records.

Evernia prunastri (L.) Ach. FR: West 1883. On branches of both coniferous and deciduous trees; frequent on Tarn Fen.

Farnoldia jurana (Schaer.) Hertel (syn. *Lecidea petrosa* Arnold) FR: Laundon 1954. Occasional on limestone outcrops, and often common on screes.

Flavoparmelia caperata (L.) Hale (syn. *Parmelia caperata* (L.) Ach.) FR: Carrington (in Miall & Carrington 1862). On *Fraxinus* and *Acer*; scarce and scattered. On a single tree near Pot Hole Lane in 2018, from which it has now disappeared.

Fuscidea cyathoides (Ach.) V. Wirth & Vězda FR: Carrington (in Miall & Carrington 1862). On gritstone blocks such as erratics, outcrops and gate posts; occasional.

F. lightfootii (Sm.) Coppins & P. James FR: Graham 1965. A pioneer of twigs in humid woodlands such as Tarn Fen; frequent and increasing.

F. lygaea (Ach.) V. Wirth & Vězda FR: Shackleton & Hebden 1893. On gritstone outcrops; scarce.

Graphis elegans (Borrer ex Sm.) Ach. FR: Wade 1959. A species of humid woodlands; rare, and not seen since first record.

G. scripta (L.) Ach. FR: Miall 1865. A species of humid woodlands; rare, and not seen since 1990.

Gyalecta jenensis (Batsch) Zahlbr. FR: Hailstone (in Whitaker 1805). On shaded and damp steep limestones, particularly in the Tarn House Cutting, but less common on exposed outcrops.

Gyalidea fritzii (Stein) Vězda FR: BLS Workshop 2017. On High Mark and on spoil at Mine Rakes; scarce.

G. subscutellaris (Vězda) Vězda (syn. *Gyalecta subscutellaris* Vězda) FR: Pentecost 1999. On bare soil associated with *Weissia* on mine spoil; rare. New to Yorkshire.

Gyrographa gyrocarpa (Flot.) Ertz & Tehler (syn. *Opegrapha gyrocarpa* Flot.) FR: Graham & James 1965. On deeply shaded, steep acidic rock, occasional.

Haematomma ochroleucum sensu lat. FR: Carrington (in Miall & Carrington 1862). On mature *Acer*, scarce, but recently seen on trees near Keeper's Cottage.

Hydropunctaria scabra (Vězda) C. Keller, Gueidan & Thüs FR: Wade & Clement 1957. On hard acidic rocks in streams; rare.

Hymenelia epulotica (Ach.) Lutzoni (syn. *Ionaspis epulotica* (Ach.) Arnold) FR: Wade 1963. On north-facing limestone walls (e.g. Highfolds Scar) and often fertile, and occasionally on outcrops.

H. prevostii (Duby) Kremp. FR: Graham 1965. On damp exposed limestone such as Highfolds Scar,

Chapel Fell and Cowside Beck; occasional, but probably overlooked.

Hypocenomyce scalaris (Ach. ex Lilj.) M. Choisy FR: Sinker 1955. Uncommon on *Betula*, *Crataegus* and old wood, and occasional on sandstone. Fertile on Tarn Fen in 2019.

Hypogymnia physodes (L.) Nyl. FR: Carrington (in Mudd 1861). Common on trees, preferring bark with a low pH, but occasionally on *Calluna* stems and acidic rock.

H. tubulosa (Schaer.) Hav. FR: Wade & Clement 1957. Mainly on twigs of *Salix* and *Alnus*; frequent on Tarn Fen, but less common elsewhere.

Hypotrachyna afrorevoluta (Krog & Swinscow) Krog & Swinscow FR: Pentecost 2019. Common on branches of *Acer*, *Fraxinus* and *Quercus*; increasing and more frequent than *H. revoluta*.

H. revoluta (Flörke) Hale FR: Pentecost 2012. Frequent on tree branches, such as those on Tarn Fen.

* *Illiosporiopsis christiansenii* (B.L. Brady & D. Hawksw.) D. Hawksw. FR: Pentecost 2019. On *Physcia* spp., on Tarn Fen; rare but spreading.

Lasallia pustulata (L.) Mérat FR: Seaward 2010. On sandstone wall by the dam at the Tarn outflow; rare.

Lathagrium auriforme (With.) Otálora, P.M. Jørg. & Wedin (syn. *Collema auriforme* (With.) Coppins & J.R. Laundon) FR: Borrer (in Lees 1888). Among bryophytes usually on steep damp limestone such as Tarn House Cutting, occasional; usually sterile.

L. cristatum (L.) Otálora, P.M .Jørg. & Wedin (syn. *Collema cristatum* (L.) F.H. Wigg.) FR: Richardson (in Ray 1724). Mainly on damp but exposed limestone; locally frequent.

L. cristatum var. *marginale* (Huds.) Cl. Roux (syn. *Collema cristatum* var. *marginale* (Huds.) Degel.; *C. marginale* (Huds.) Hoffm.) FR: Sinker 1960. On limestone; scarce. Less well-developed forms are sterile and isidiate, and therefore often difficult to separate from *C. fuscovirens*.

L. fuscovirens (With.) Otálora, P.M. Jørg. & Wedin (syn. *Collema fuscovirens* (With.) J.R. Laundon) FR: Wade & Clement 1957. Occasional on damp rocks, often among mosses; can be confused with *C. cristatum* when young.

L. undulatum (Laurer ex Flot.) Poetsch (syn. *Collema undulatum* Laurer ex Flot.) FR: Carrington (in Miall & Carrington 1862). On exposed limestone outcrops; uncommon.

Lecania cuprea (A. Massal.) van den Boom & Coppins FR: James 1970. Occasional on damp and shaded limestone; recently seen in Tarn House woods and at Watlowes.

L. cyrtella (Ach.) Th. Fr. FR: Seaward 1977. On *Fraxinus*, *Salix* and *Acer* twigs; occasional, but probably overlooked.

L. erysibe (Ach.) Mudd FR: Shackleton & Hebden 1893. On calcareous stonework subject to nutrient enrichment; occasional.

L. naegelii (Hepp) Diederich & van den Boom (syn. *Bacidia naegelii* (Hepp) Zahlbr.) FR: James 1970. On *Sambucus*; rare, with no recent records.

Lecanora aitema (Ach.) Hepp FR: BLS Workshop 2017. On worked timber (e.g. near footpath on Comb Hill); scarce.

L. campestris (Schaer.) Hue FR: Wade c. 1959. On hard acidic rock subject to base enrichment, often on buildings and walls, occasional.

L. carpinea (L.) Vain. FR: BLS Workshop 2017. On *Fraxinus* twigs in the lower car park at Tarn House and elsewhere on the estate; occasional.

L. chlarotera Nyl. FR: Carrington (in Miall & Carrington 1862). Occasional to locally frequent on bark of deciduous trees, and increasing.

L. conizaeoides Nyl. ex Cromb. FR: Sinker 1960. Formerly common on trees and acidic rock, but scarce since 2011.

L. expallens Ach. FR: Graham 1965. Frequent on bark of mature trees, especially *Acer*.

L. intricata (Ach.) Ach. FR: Wade & Clement 1957. On exposed sandstones, gateposts and Tarn House veranda; occasional.

L. muralis (Schreb.) Rabenh. (syn. *Protoparmeliopsis muralis* (Schreb.) M.Choisy) FR: Carrington (in Miall & Carrington 1862). On nutrient-enriched rock, both limestone and sandstone, such as sills of Tarn House, but local.

L. polytropa (Hoffm.) Rabenh. FR: Carrington (in Miall & Carrington 1862). On exposed sandstones; frequent.

L. pulicaris (Pers.) Ach. FR: James 1970. On fence posts and rails; scarce.

L. rupicola (L.) Zahlbr. FR: Carrington (in Miall & Carrington 1862). On non-calcareous rock of walls and erratics; scarce.

L. soralifera (Suza) Räsänen FR: Graham 1965. On sandstones and other non-calcareous rock, including Tarn House; occasional.

L. sulphurea (Hoffm.) Ach. FR: Hailstone (in Whitaker 1805). On acidic rock, especially in walls; scarce.

Lecidea confluens (Weber) Ach. FR: Shackleton & Hebden 1893. On exposed sandstone; scarce, with no recent records.

L. grisella Flörke (syn. *L. fuscoatra* var. *grisella* (Flörke) Nyl.) FR: Shackleton &/or Hebden (in Rotheray 1900). On exposed acidic rock; occasional. There are no confirmed records of the closely related *L. fuscoatra*.

L. lapicida (Ach.) Ach. FR: Shackleton & Hebden 1893. On exposed acidic rocks; occasional.

L. lithophila (Ach.) Ach. FR: Shackleton & Hebden 1983. On exposed acidic rock such as Millstone Grit; scarce, with no recent records.

L. obluridata Nyl. FR: Pentecost 1999. Locally frequent on zinc-rich mine spoil at Pikedaw.

Lecidella elaeochroma (Ach.) M. Choisy FR: Shackleton & Hebden 1893. Frequent on smooth bark of *Fraxinus* and a range of younger trees; widespread and increasing.

L. scabra (Taylor) Hertel & Leuckert FR: Graham 1965. On shaded acidic rocks, mainly in walls; occasional.

L. stigmatea (Ach.) Hertel & Leuckert FR: Sinker 1955. Mainly on mortar of walls and buildings, more rarely on limestone outcrops; locally frequent, including Highfolds.

Lempholemma botryosum (A. Massal.) Zahlbr. FR: Graham & James 1965. In runnels and small solution hollows on limestone pavements; locally frequent.

L. cladodes (Tuck.) Zahlbr. FR: Graham & James 1965. Uncommon, in similar habitats as *L. botryosum* and perhaps only a form of this species.

L. polyanthes (Bernh.) Malme FR: Hitch 1976. On moss over a dry-stone wall; rare.

Lepra albescens (Huds.) Hafellner (syn. *Pertusaria albescens* (Huds.) M. Choisy & Werner, incl. var. *corallina* (Zahlbr.) J.R. Laundon) FR: Carrington (in Mudd 1861). On mature *Fraxinus* and *Acer*; uncommon; var. *corallina* more frequent and often associated with var. *albescens*.

L. amara (Ach.) Hafellner (syn. *Pertusaria amara* (Ach.) Nyl.) FR: Laundon 1954. Mainly on the bark of mature trees, but also on mosses over limestone and on Millstone Grit gateposts; occasional.

L. aspergilla (Ach.) Hafellner (syn. *P. aspergilla* (Ach.) J.R. Laundon) FR: James 1970. On acidic rock in walls; rare, with no recent records.

L. corallina (L.) Hafellner (syn. *Pertusaria corallina* (L.) Arnold) FR: Wade 1959. On acidic rock, including boulders and walls; occasional.

L. multipuncta (Turner) Hafellner (syn. *Pertusaria multipuncta* (Turner) Nyl.) FR: Carrington (in Mudd 1861). Mainly a species of *Corylus*; not seen since 19th century.

Lepraria caesioalba (B. de Lesd.) J.R. Laundon FR: BLS Workshop 2017. On soil over acidic rock at Chapel Fell; rare.

L. eburnea J.R. Laundon FR. Pentecost 2022. Occasional on *Acer* at Ha Mire Plantation.

L. finkii (B. de Lesd.) R.C. Harris (syn. *L. lobificans* Nyl.) FR: Seaward 1985. On shaded limestone, including Tarn House Cutting, spreading onto mosses; occasional.

L. incana sensu lat. FR: Sinker 1960. Common on shaded acidic bark and acidic rock; the precise identity of the material remains uncertain, but *L. incana* sensu str. was found in 2017.

L. nivalis J.R. Laundon FR: Graham & James 1965. On shaded and dry limestone outcrops, including Tarn House Cutting; locally frequent.

L. vouauxii (Hue) R.C. Harris (syn. *Leproloma vouauxii* (Hue) J.R. Laundon) FR: Seaward 1985. On shaded bark; occasional.

Lichenomphalia hudsoniana (H.S. Jenn.) Redhead *et al*. FR: Sinker 1955. Local and scarce on peat of Tarn Moss, but more widespread on Fountains Fell.

L. umbellifera (L.: Fr.) Redhead *et al*. (syn. *Omphalina ericetorum* (Fr.) M. Lange ex H. Bigelow) FR: Sinker 1955. Uncommon on bare, damp peat.

L. velutina (Quél.) Redhead *et al*. FR: Sinker 1955. Locally frequent on wet peat, particularly on Tarn Moss.

Melanelixia fuliginosa (Fr. ex Duby) O. Blanco *et al*. (syn. *Parmelia glabratula* ssp. *fuliginosa* (Fr. ex Duby) J.R. Laundon FR: Shackleton & Hebden 1893. Frequent on acidic rock and occasionally on bark and worked timber.

M. glabratula (Lamy) Sandler & Arup (syn. *Parmelia glabratula* (Lamy) Nyl. spp. *glabratula* FR: West 1883 (as *Parmelia olivacea* sensu auct. brit.). On *Acer*, *Fagus*, *Fraxinus* and *Salix*; locally frequent.

M. subaurifera (Nyl.) O. Blanco *et al*. (syn. *Parmelia subaurifera* Nyl.) FR: Shackleton & Hebden 1893. On branches of deciduous trees; locally frequent.

Melanohalea elegantula (Zahlbr.) O. Blanco *et al*. (syn. *Parmelia elegantula* (Zahlbr.) Szatala) FR: Pentecost 2014. On *Salix* twigs (e.g. Tarn Fen); rare, but probably increasing.

M. exasperatula (Nyl.) O. Blanco *et al*. (syn. *Parmelia exasperatula* Nyl.) FR: Pentecost 2018. On *Acer* twigs by the Pennine Way; rare.

M. laciniatula (Flagey ex H. Olivier) O. Blanco *et al*. (syn. *Parmelia laciniatula* (H. Olivier) Zahlbr. FR: James 1970. On *Acer*; very local, and recently seen on twigs near Keeper's Cottage.

Merismatium deminutum (Arnold) Cl. Roux & Nav.-Ros. (syn. *Polyblastia deminuta* Arnold) FR: Shackleton & Hebden 1893. On exposed hard limestone; uncommon.

* *M. discrepans* (J. Lahm ex Arnold) Triebel FR: BLS Workshop 2017. On *Protoblastenia rupestris*; uncommon.

Micarea coppinsii Tønsberg FR: BLS Workshop 2017. On trees near the Pennine Way, near footpath over Comb Hill and Tarn Fen; uncommon, but probably overlooked.

M. denigrata (Fr.) Hedl. FR: Seaward & Henderson 1999. On wooden posts; uncommon.

M. lignaria (Ach.) Hedl. FR: Sinker 1955. Frequent and widespread on acidic soils, especially peat of Tarn Moss, and on leached bark, lignum and fence pales.

M. melaena (Nyl.) Hedl. FR: Wade 1961. On lignum of *Alnus* and *Betula*; uncommon.

M. peliocarpa (Anzi) Coppins & R. Sant. FR: BLS Workshop. 2017. On spoil at Mine Rakes; rare.

M. prasina s.lat. FR: James 1970. On rotting tree stump; rare or overlooked.

Miriquidica leucophaea (Rabenh.) Hertel & Rambold FR: Wade 1959. On acidic rock in walls and on zinc-rich mine spoil; scarce.

* *Muellerella lichenicola* (Sommerf.) D. Hawksw. FR: BLS Workshop 2017. On *Solenopsora candicans*; rare.

Myriolecis albescens (Hoffm.) Śliwa, Xhao Xin & Lumbsch (syn. *Polyozosia albescens* (Hoffm.) S.Y. Kondr., Lőkös & Farkas; *Lecanora albescens* (Hoffm.) Branth & Rostr.) FR: Shackleton & Hebden 1893. On hard often exposed limestones, but more frequent on the walls of rendered or mortared buildings such as Tarn House.

M. crenulata (Ach.) Śliwa, Xhao Xin & Lumbsch (syn. *Lecanora crenulata* Hook.) FR: Carrington (in Miall 1865). On sheltered to exposed limestone and mortar; frequent.

M. dispersa (Pers.) Śliwa, Xhao Xin & Lumbsch (syn. *Polyozosia dispersa* (Pers.) S.Y. Kondr., Lőkös & Farkas; *Lecanora dispersa* (Pers.) Röhl.) FR: Sinker 1960. On sheltered to exposed limestone and cementwork, probably benefitting from nutrient enrichment; frequent.

M. hagenii (Ach.) Śliwa, Xhao Xin & Lumbsch (syn. *Polyozosia dispersa* (Ach.) S.Y. Kondr., Lőkös & Farkas; *Lecanora hagenii* (Ach.) Ach.) FR: BLS Workshop 2017. On young *Fraxinus* by Tarn House car park; rare, but overlooked and probably increasing.

M. semipallida (H. Magn.) Śliwa, Xhao Xin & Lumbsch (syn. *Polyozosia semipallida* (H. Magn.) S.Y. Kondr., Lőkös & Farkas; *Lecanora semipallida* H. Magn.) FR: BLS Workshop 2017. Occasional and widespread on nutrient-enriched limestone, such as a boulder near High Stables.

Myriospora smaragdula (Wahlenb.) Nägeli FR: BLS Workshop 2017. On lead-rich spoil at Mine Rakes; rare.

Naetrocymba saxicola (A. Massal.) R.C. Harris (syn. *A. saxicola* A. Massal. FR: James 1970. On steep shaded limestone (e.g. Highfolds); occasional, but easily overlooked for *Porina* species.

** *Naevia punctiformis* (Ach.) A. Massal. (syn. *Arthopyrenia punctiformis* A. Massal. FR: Carrington (in Miall & Carrington 1862). On smooth bark of young trees such as *Corylus*; local.

Normandina pulchella (Borrer) Nyl. FR: Stansfield 1857 (in Miall & Carrington 1862). On mossy *Salix* and *Alnus* in Tarn Fen and by Malham Tarn, and on *Acer* in Ha Mire Plantation; occasional, but increasing after a long absence.

Ochrolechia androgyna (Hoffm.) Arnold FR: Wade 1959. On old *Fraxinus* and on acidic rocks in walls; occasional.

O. parella (L.) A. Massal. FR: West 1883. On acidic rocks and walls subject to some base enrichment; scarce.

O. subviridis (Høeg) Erichsen FR: Sinker 1960. On bark of mature trees; occasional.

Opegrapha dolomitica (Arnold) Clauzade & Cl. Roux FR: Carrington (in Lees 1888). Occasional on steep and shaded natural limestone exposures; abundant in Tarn House Cutting.

* *O. hochstetteri* Coppins FR: Graham & James, 1965 as *Opegrapha parasitica* (A. Massal.) H. Oliver). On *Verrucaria hochstetteri*; rare.

* *O. pulvinata* Rehm FR: Pentecost 2017. On *Dermatocarpon miniatum* in Watlowes; rare.

* *O. rupestris* Pers. FR: Graham & James 1965. On *Verrucaria baldensis*, widespread and common.

O. vermicellifera (Kunze) J.R. Laundon FR: Fryday 1990. On basic bark; rare, and no post-1990 records.

O. vulgata (Ach.) Ach. FR: Shackleton & Hebden 1893. On sheltered bark of *Acer*; occasional.

Ophioparma ventosa (L.) Norman FR: Wade & Clement 1957. On siliceous rock at Moor Head, the only record for the area.

Parmelia omphalodes (L.) Ach. FR: Sinker 1955. On acidic rock, usually associated with bird perches; scarce.

P. saxatilis (L.) Ach. FR: Sinker 1955. On a wide range of trees including conifers and on acidic rocks, generally common and occasionally fertile.

P. sulcata Taylor FR: Sinker 1955. Mainly on twigs and branches of deciduous trees; common.

Parmelina pastillifera (Harm.) Hale FR: Pentecost & Allinson 2015. Colonizing the window edge of an old minibus in High Stables car park and probably originating high in the *Acer* above it; rare.

Parmeliopsis ambigua (Wulfen) Nyl. FR: Hebden c. 1893 (in Watson 1946). Occasional on *Acer*, *Betula*, *Larix* and fence palings, and more rarely on acidic rock above 600m.

Parmotrema perlatum (Huds.) M. Choisy (syn. *Parmelia perlata* (Huds.) Ach. FR: West 1883. On *Salix* of Tarn Fen; occasional, but increasing.

Peltigera canina sensu str. FR: BLS Workshop 2017. On turf at Highfolds Scar; rare.

P. didactyla (With.) J.R. Laundon FR: Seaward 1986. On disturbed bank on Tarn Fen and along Cowside Beck; uncommon.

P. horizontalis (Huds.) Baumg. FR: Pentecost 2012. On mosses at the bases of old *Salix* on Tarn Fen and also at Watlowes, Comb Hill and Malham Cove; occasional.

P. hymenina (Ach.) Delise ex Duby (syn. *P. lactucifolia* (With.) J.R. Laundon) FR: Carrington (in Miall & Carrington 1862). On mosses, base-rich soil, lignum and on mossy base of trees; widespread but occasional.

P. leucophlebia (Nyl.) Gyeln. FR: Sinker 1955. Among bryophytes and other low vegetation in sheltered spots on the fells including Highfolds Scar and on a N-facing bank at Mine Rakes; scarce and widely distributed.

P. membranacea (Ach.) Nyl. FR: West 1883. On mossy base-rich soils and peats, and on *Salix* on Tarn Fen and Acer in Ha Mire Plantation; occasional.

P. neckeri Hepp ex Müll. Arg. FR: BLS Workshop 2017. On mossy soil over spoil at Mine Rakes; rare.

P. polydactylon (Neck.) Hoffm. FR: Harrold 1971. On soil ledge of limestone crag near Malham Tarn; rare.

P. praetextata (Flörke ex Sommerf.) Zopf FR: Sinker 1955. Occasional on mosses over limestone and mature mossy trees, including *Fagus* by the drive to High Stables and *Acer* in Ha Mire Plantation.

P. rufescens (Weiss) Humb. FR: Graham 1965. On limestone soils; occasional, but probably overlooked.

Pertusaria coccodes (Ach.) Nyl. FR: Seaward 1981. On bark of mature *Fraxinus* and *Acer*; scarce.

P. pertusa (L.) Tuck. FR: West 1883. On *Fraxinus* and *Acer*; occasional.

P. pseudocorallina (Sw.) Arnold FR: James 1965. On nutrient-enriched acidic rock; no post-1979 records.

Petractis clausa (Hoffm.) Kremp. FR: Hailstone (in Whitaker 1805). On damp limestone, usually near the ground; occasional.

Phaeophyscia nigricans (Flörke) Moberg FR: Seaward 2011. On nutrient-enriched limestone; rare.

P. orbicularis (Neck.) Moberg FR: Sinker 1955. On nutrient-enriched bark, especially twigs and branches, and on stonework such as the sills of Tarn House; locally common.

Phlyctis argena (Ach.) Flot. FR: Seaward 1985. Occasional on tree bark, particularly *Acer* and *Fraxinus*, but plentiful near Keeper's Cottage.

Physcia adscendens H. Olivier FR: Gilbert 1963. On nutrient-enriched bark and bird-perch stones; locally frequent and increasing. Occasionally fertile.

P. aipolia (Ehrh. ex Humb.) Fürnr. FR: Nowell (in Lees 1888). On twigs and branches of *Fraxinus*, *Acer* and *Salix* in Tarn Fen; occasional and widespread, but returning after a long absence.

P. caesia (Hoffm.) Fürnr. FR: Shackleton & Hebden 1893. On nutrient-enriched and base-rich rock and stone including the Tarn House sills; locally frequent.

P. tenella (Scop.) DC. FR: West (in Lees 1888). On twigs and branches of a wide range of trees and occasionally on nutrient-enriched stone; widespread and increasing. Occasionally fertile, as on Tarn Fen.

Physconia distorta (With.) J.R. Laundon FR: Carrington (in Miall & Carrington 1862). A species of mature *Fraxinus* and *Acer*; scarce, with no recent records.

P. grisea (Lam.) Poelt FR: Carrington (in Watson 1946). On calcareous walls and dust-impregnated tree bark; not recorded since 1977.

Placidium lachneum (Ach.) B. de Lesd. (syn. *Catapyrenium lachneum* (Ach.) R. Sant.) FR: Carrington (in Mudd 1861). On soil between limestone outcrops; occasional.

P. squamulosum (Ach.) Breuss FR: BLS Workshop 2017. On soil filled crevices on limestone crevices in exposed areas at Comb Hill (S) and Watlowes; local and uncommon.

Placopsis lambii Hertel & V. Wirth (syn. *P. gelida* sensu auct. brit.) FR: Hudson 1778. Last seen in 1963 on slates of one of the boathouses.

Placopyrenium fuscellum (Turner) Gueidan & Cl. Roux (syn. *Verrucaria fuscella* (Turner) Winch; *V. glaucina* sensu auct. brit.) FR: Shackleton & Hebden 1893. On exposed limestone, including walls, and perhaps associated with bird excreta; occasional to frequent.

Placynthiella icmalea (Ach.) Coppins & P. James FR: Wade & Clement 1957. On exposed lignum; occasional, but easily overlooked.

P. uliginosa (Schrad.) Coppins & P. James FR:

Carrington (in Miall & Carrington 1862). On peaty soils of Tarn Moss where it is widespread but inconspicuous, and on rotting wood; locally frequent.

Placynthium garovaglii (A. Massal.) Malme FR: James 1969. On steep limestone (e.g. by the path near Comb Hill); rare or overlooked.

P. nigrum (Huds.) Gray FR: Hailstone (in Whitaker 1805). On damp limestone where it is frequent; one group of thalli by Tarn House has been monitored over a period of 20 years.

P. subradiatum (Nyl.) Arnold FR: James 1969. On fairly dry vertical limestone, such as Chapel Fell; scarce, but easily overlooked.

Platismatia glauca (L.) W.L. Culb, & C.F. Culb. FR: Carrington (in Miall & Carrington 1862). On the bark of a wide range of trees in humid locations; locally frequent, as for example on Tarn Fen and in Ha Mire Plantation.

Poeltinula cerebrina (DC.) Hafellner FR: Carrington (in Miall & Carrington 1862). A rare red-data list species known from Highfolds Scar and formerly from Gordale. On exposed limestone, but easily overlooked unless well developed.

Polyblastia albida Arnold FR: Graham 1965. On exposed limestone outcrops (e.g. two sites on High Mark); occasional.

P. cupularis A. Massal. FR: Shackleton & Hebden 1893. On exposed limestone (e.g. High Mark & Chapel Fell); uncommon.

P. dermatodes A. Massal. FR: Laundon 1954. On exposed limestone (e.g. Chapel Fell), including pavements; uncommon.

Porina aenea (Körb.) Zahlbr. (syn. *Pseudosagedia aenea* (Körb.) Hafellner & Kalb) FR: Fryday 1990. On smooth bark of mainly mature *Fraxinus*; scarce.

P. chlorotica (Ach.) Müll. Arg. (syn. *Pseudosagedia chlorotica* (Ach.) Hafellner & Kalb) FR: Shackleton & Hebden 1893. On shaded, usually steep limestone on walls and outcrops especially in woodland; occasional to frequent.

P. linearis (Leight.) Zahlbr. (syn. *Pseudosagedia linearis* (Leight.) Hafellner & Kalb) FR: Sinker 1955. On shaded limestone; occasional.

Porpidia cinereoatra (Ach.) Hertel & Knoph FR: Seaward 1977. On acidic rock, usually on vertical surfaces; occasional.

P. crustulata (Ach.) Hertel & Knoph FR: Sinker 1955. On acidic rock and stones, often close to the ground; locally frequent.

P. hydrophila (Fr.) Hertel & A.J. Schwab FR: Sinker 1960. On acidic rock in streams; occasional.

P. macrocarpa (DC.) Hertel & A.J. Schwab FR: Sinker 1955. On sandstone and other acidic rock; occasional to frequent.

P. soredizodes (Lamy ex Nyl.) J.R. Laundon FR: Seaward 2011. On siliceous rock; occasional.

P. speirea (Ach.) Kremp. FR: Carrington (in Watson 1946). A species of base-enriched siliceous rocks; to be searched for on siliceous erratics in limestone walls, but there have been no recent records.

P. tuberculosa (Sm.) Hertel & Knoph FR: Laundon 1954. On acidic rock, particularly Millstone Grit, including Tarn House; widespread and frequent.

Protoblastenia calva (Dicks.) Zahlbr. FR: Hailstone (in Whitaker 1805). On limestone outcrops in humid situations; widespread and locally frequent.

P. cyclospora (Hepp. ex Körb.) Poelt FR: Shackleton & Hebden 1892. On limestone outcrops; not seen since 1970, but may be widespread.

P. incrustans (DC.) J. Steiner FR: Graham 1965. On exposed usually damp limestone; occasional, but easily overlooked.

P. lilacina Poelt & Vězda FR: BLS Workshop 2017. On steep limestone (e.g. Highfolds and High Mark); occasional, but probably mistaken for other *Protoblastenia* species.

P. rupestris (Scop.) J. Steiner FR: West 1883. On limestone in humid situations which may remain damp for long periods; locally common.

Protoparmelia badia (Hoffm.) Hafellner FR: Sinker 1955. On acidic rock with some nutrient enrichment; occasional.

Pseudevernia furfuracea (L.) Zopf. FR: West 1883. Mainly on the twigs and branches of trees in exposed areas, but also often on acidic rock of walls where there is some nutrient enrichment; perhaps more common than formerly. Both chemical strains occur in the Malham area, but the C+ form (var. *ceratea* (Ach.) D. Hawksw.) is more frequent.

Psilolechia lucida (Ach.) DC. FR: Gilbert 1963. Locally frequent on rendered buildings and stonework protected from rain, including Tarn House and its outbuildings.

Psoroma hypnorum (Vahl) Gray FR: Carrington (in Miall & Carrington 1862). On mosses over soil and trees in acidic sites; rare, and possibly extinct.

Punctelia subrudecta sensu lat. (incl. *P. subrudecta* sensu str. and/or *P. jeckeri* (Roum.) Kalb.) FR: Shackleton & Hebden 1893. Occasional on bark of mature trees; recently seen in the grounds of Tarn House, on Tarn Fen, and in Ha Mire Plantation; increasing elsewhere.

Pyrrhospora quernea (Dicks.) Körb. FR: Fryday 1990. On *Quercus* and *Fraxinus*; scarce.

Ramalina calicaris (L.) Fr. FR: Miall 1865. On tree branches; no records since 19th century.

R. farinacea (L.) Ach. FR: West 1883. On twigs and branches of a wide range of trees; frequent and increasing in recent years.

R. fastigiata (Pers,) Ach. FR: West (in Lees 1888). On twigs and branches of woodland trees, and well developed on Virginia Creeper on Tarn House; occasional, but increasing in recent years.

R. fraxinea (L.) Ach. FR: West 1883. A fine specimen on the branch of *Acer* by Keeper's Cottage disappeared in 2016, but the species is increasing and probably occurs elsewhere as isolated thalli.

Rhizocarpon geographicum (L.) DC. FR: Sinker 1955. Uncommon on fine sandstones and slates, erratics (incl. *R. riparium* Räsänen FR: Pentecost 2010 on Great Close Hill), and Tarn House beneath the veranda.

R. oederi (Weber) Körb. FR: Sinker 1955. On iron-rich Millstone Grit; scarce.

R. petraeum (Wulfen) A. Massal. (syn. *R. concentricum* (Davies) Beltr.) FR: Carrington (in Miall & Carrington 1862). On acidic rock subject to base enrichment; occasional.

R. reductum Th. Fr. (syn. *R. obscuratum* sensu auct. brit.) FR: Sinker 1955. On Millstone Grit boulders and walls, including Tarn House; occasional,

R. umbilicatum (Ramond) Flagey FR: Carrington (in Miall & Carrington 1862). On exposed limestone; widely distributed and often fertile.

Rinodina bischoffii (Hepp) A. Massal. FR: Graham 1965. On exposed limestones, such as High Mark; scarce.

R. immersa (Körb.) Zahlbr. FR: James 1970. On exposed limestone pavement and boulders, such as on Chapel Fell and High Mark; easily overlooked, and perhaps more frequent than the records suggest.

R. oleae Bagl. (as *R. gennarii* Bagl. in Seaward & Pentecost 2001) FR: Sinker 1960. On nutrient-enriched limestone and buildings including Tarn House, occasional.

Romjularia lurida (Ach.) Timdal (syn. *Psora lurida* (Ach.) DC.) FR: Carrington (in Mudd 1861). On soil in limestone crevices (e.g. on Highfolds); frequent.

Sagiolechia protuberans (Ach.) A. Massal. FR: Acton 2017. On limestone boulder above High Stables, and at several locations on sheltered limestone grikes on High Mark; occasional and easily overlooked, but appears to be widespread on higher outcrops.

Sarcogyne regularis Körb. FR: Sinker 1960. On limestone rocks (e.g. Chapel Fell), though mainly on walls; occasional.

Schaereria cinereorufa (Schaer.) Th. Fr. FR: Shackleton & Hebden 1893. On hard acidic rock subject to some nutrient enrichment, but no recent records.

Sclerococcum griseisporodochium Etayo FR: Powell 2017. On sheltered limestone above High Stables (boulder) and outcrops at Watlowes and High Mark, associated with *Opegrapha dolomitica*.

Scoliciosporum chlorococcum (Graewe ex Stenh.) Vězda FR: Seaward 1985. On acidic or leached bark of trees; no recent records and probably decreasing.

S. umbrinum (Ach.) Arnold FR: Seaward 1999. On acidic rock including stonework, mine spoil and Millstone Grit pedestals on the veranda of Tarn House; occasional.

Scytinium fragile (Taylor) Otálora, P.M. Jørg. & Wedin (syn. *Collema fragile* Taylor) FR: BLS Workshop 2017. On steep sheltered limestone on Highfolds; occasional.

S. gelatinosum (With.) Otálora, P.M. Jørg. & Wedin (syn. *Leptogium gelatinosum* (With.) J.R. Laundon) FR: Hailstone (in Whitaker 1805). Among mosses on damp but exposed limestones including Tarn House Cutting; locally frequent.

S. lichenoides (L.) Otálora, P.M. Jørg. & Wedin (syn. *Leptogium lichenoides* (L.) Zahlbr.) FR: Hailstone (in Whitaker 1805). Occasional on mossy limestones, such as the wall near Keeper's Cottage, but most records probably refer to *S. pulvinatum*.

S. massiliense (Nyl.) Otálora, P.M. Jørg. & Wedin (syn. *Leptogium massiliense* Nyl.) FR: BLS Workshop 2017. On loose scree, such as Highfolds; rare.

S. plicatile (Ach.) Otálora, P.M. Jørg. & Wedin (syn. *Leptogium plicatile* (Ach.) Leight.) FR: Richardson 1721 (as *Lichen fluviatilis* = *Collema dichotomum* (With.) Coppins & Laundon; see Degelius 1954: 365). On moist shaded limestones, usually near water; rare. First recorded in the stream issuing from Malham Cove and recorded recently from Darnbook Beck.

S. pulvinatum (Hoffm.) Otálora, P.M. Jørg. & Wedin (syn. *Leptogium pulvinatum* (Hoffm.) Cromb.) FR: West 1883 (as *L. lacerum*). Occasional on mosses over shaded limestone, including Tarn House Cutting; widespread, but likely to have been misidentified in the past for *S. lichenoides*.

S. schraderi (Ach.) Otálora, P.M. Jørg. & Wedin (syn. *Leptogium schraderi* (Ach.) Nyl.) FR: Shackleton & Hebden 1893. On mossy limestones and soils; occasional.

S. teretiusculum (Wallr.) Otálora, P.M. Jørg. & Wedin (syn. *Leptogium teretiusculum* (Wallr.) Arnold) FR: BLS Workshop 2017. Uncommon on shaded limestone of Highfolds Scar and by the Pennine

Way; normally corticolous, but may colonize limestone and other base-rich rock.

S. turgidum (Ach.) Otálora, P.M. Jørg. & Wedin (syn. *Leptogium turgidum* (Ach.) Cromb.) FR: Carrington (in Miall 1865). On calcareous walls and limestone outcrops, including Highfolds and Comb Hill; uncommon or overlooked.

Solenopsora candicans (Dicks.) J. Steiner FR: Carrington (in Miall & Carrington 1862). Widely distributed on limestone and perhaps influenced by nutrient enrichment; locally frequent.

Solorina saccata (L.) Ach. FR: Carrington (in Miall & Carrington 1862). On deeply shaded mossy soil on steep banks usually among limestone outcrops, mostly north- or east-facing; occasional, but recently seen on Highfolds, on Malham Cove pavement, at Comb Hill and Cowside Beck.

S. spongiosa (Ach.) Anzi FR: West 1883. The blue-green morphotype, associated with *S. saccata*, recently seen at Watlowes and Comb Hill; rare.

Squamarina cartilaginea (With.) P. James FR: Hudson (Withering 1792). On damp limestone outcrops close to the ground or in seepages; widely distributed but not common, and probably decreasing.

Staurothele caesia (Arnold) Arnold FR: James 1966. Occasional on limestone boulders and outcrops (e.g. Watlowes, High Mark, Chapel Fell & Comb Hill).

S. fissa (Taylor) Zwackh FR: Graham 1965. On hard acidic rock in streams; rare.

S. hymenogonia (Nyl.) Th. Fr. FR: Shackleton & Hebden 1892. On dry limestone outcrops; scarce.

S. rupifraga (A. Massal.) Arnold FR: James 1969. Occasional on limestone outcrops at Gordale Beck, High Mark and Watlowes.

Steinia geophana (Nyl.) Stein FR: BLS Workshop 2017. On soil associated with mine spoil at Mine Rakes; rare.

** *Stenocybe pullatula* (Ach.) Stein FR: Pentecost 2014. On twigs of *Alnus* by the boardwalk on Tarn Fen and by the north shore of Malham Tarn; uncommon.

Stereocaulon evolutum Graewe FR: Wade 1957. On outcrops of Silurian slate; rare and no recent records.

S. pileatum Ach. FR: Pentecost 1999. On iron-rich mine spoil; rare.

S. vesuvianum Pers. FR: Pentecost 1999. On an iron-rich mineral vein; rare.

* *Stigmidium placynthii* Cl. Roux & Nav.-Ros. FR: Cannon 2017. On *Placynthium* sp. on limestone; rare.

Strangospora pinicola (A. Massal.) Körb. FR: Henderson 2005. On lignum near Cowside Beck; rare.

Synalissa symphorea (Ach.) Nyl. (syn. *S. ramulosa* (Hoffm.) Körb.) FR: Carrington (in Miall & Carrington 1862). In grykes of limestone pavement; local and scarce but easily overlooked.

* *Telogalla olivieri* (Vouaux) Nik. Hoffm. & Hafellner FR: BLS Workshop 2017. On *Xanthoria parietina*; rare.

Tephromela atra (Huds.) Hafellner ex Kalb FR: Hailstone (in Whitaker 1805). Occasional on acidic rock, including that exposed to some base-enrichment in walls, as well as outcrops or boulders.

Thalloidima sedifolium (Scop.) Kistenich *et al.* (syn. *Toninia sedifolia* (Scop.) Timdal) FR: Hailstone (in Whitaker 1805). In soil crevices in limestone outcrops, usually S-facing; local and widespread, but probably decreasing.

Thelenella muscorum (Th. Fr.) Vain. (syn. *Chromatochlamys muscorum* (Th. Fr.) H. Mayrhofer & Poelt) FR: James 1970. On mosses over limestone; rare and no recent records.

Thelidium decipiens (Nyl.) Kremp. FR: Laundon 1954. On limestone outcrops and pavement; occasional, but overlooked.

T. impressum (Stizenb.) Zschacke FR: Woods 1984. On limestone at High Mark; rare.

T. incavatum Mudd FR: James 1965. On limestone (e.g. Watlowes, Highfolds, High Mark and Chapel Fell), usually below outcrops; occasional, but overlooked.

T. papulare (Fr.) Arnold FR: BLS Workshop 2017. On steep limestone outcrops at Highfolds and Comb Hill; rare, but easily overlooked for a form of *Acrocordia conoidea*.

T. pyrenophorum (Ach.) Mudd FR: Shackleton & Hebden 1893. On limestone outcrops; scarce but recently seen at Watlowes and Comb Hill.

T. zwackhii (Hepp) A. Massal. FR: Pentecost & Fletcher 1974. On calcareous tufa in Waterfall Beck and Cowside Beck; rare.

Thelotrema lepadinum (Ach.) Ach. FR: Carrington (in Miall & Carrington 1862). A species of damp woodlands, not seen since the 19th century.

Toniniopsis aromatica (Sm.) Kistenich *et al.* (syn. *Toninia aromatica* (Sm.) A. Massal.) FR: Sinker 1960. In crevices of limestone outcrops; local.

T. bagliettoana (A. Massal. & De Not.) Kistenich & Timdal (syn. *Bacidia bagliettoana* (A. Massal. & De Not.) Jatta) FR: Carrington (in Miall & Carrington 1862). On mosses over limestone; scarce and no post-1979 records.

T. verrucarioides (Nyl.) Kistenich *et al.* (syn. *Toninia verrucarioides* (Nyl.) Timdal) FR: Shackleton &/or Hebden (in Rotheray 1900). Occasional on limestone (e.g. Highfolds, Watlowes & Comb Hill), usually overgrowing *Placynthium*.

Trapelia coarctata (Sm.) M. Choisy FR: Shackleton &/or Hebden (in Rotheray 1900). On damp acidic rocks, often near the ground; uncommon.

T. placodioides Coppins & P. James FR: Seaward 2011. On damp acidic rock (e.g. by path near Comb Hill); scarce.

Trapeliopsis flexuosa (Fr.) Coppins & P. James FR: Wade & Clement 1957. On lignum in the peat of Tarn Moss; occasional.

T. granulosa (Hoffm.) Lumbsch FR: Laundon 1954. On eroded peat, decaying wood and rotting bark; locally frequent.

T. pseudogranulosa Coppins & P. James FR: Seaward 1999. On rotting wood; scarce.

Tuckermanopsis chlorophylla (Willd.) Hale (syn. *Cetraria chlorophylla* (Willd.) Vain.) FR: Sinker 1955. On rain-leached bark of mature trees on Highfolds Scar; scarce, but recently seen on *Salix* in Tarn Fen.

Umbilicaria polyphylla (L.) Baumg. FR: Pentecost 1993. On gritstone outcrops on Fountains Fell; rare.

Usnea subfloridana Stirt. FR: West 1883. Occasional on twigs and branches of trees in humid areas such as Tarn Fen; probably increasing.

Varicellaria lactea (L.) I. Schmitt & Lumbsch (syn. *Pertusaria lactea* (L.) Arnold) FR: Wade & Clement 1957. On sheltered acidic or weakly calcareous rock; scarce, with no recent records.

Verrucaria aethiobola Wahlenb. FR: Shackleton & Hebden 1892. On acidic rock in streams; scarce.

V. aquatilis Mudd FR: Pentecost 1985 (cf. Carrington (in Miall & Carrington 1862) as *V. margacea*). On submerged cobbles of limestone and gritstone in streams; scarce.

V. baldensis A. Massal. (syn. *Bagliettoa baldensis* (A. Massal.) Vězda) FR: Sinker 1960. Common on exposed to mildly sheltered limestone.

V. caerulea DC. FR: Carrington (in Miall & Carrington 1862). Occasional on shaded hard limestone.

V. calciseda DC. (syn. *Bagliettoa calciseda* (DC.) Gueidan & Cl. Roux) FR: West 1883. On exposed limestone outcrops; recently (2017) seen at Highfolds, Chapel Fell, Watlowes and High Mark, probably widespread and frequent.

V. cyanea A. Massal. (syn. *Parabagliettoa cyanea* (A. Massal.) Gueidan & Cl. Roux) FR: Shackleton & Hebden 1892. On hard limestone, but no recent records.

V. dufourii DC. (syn. *Parabagliettoa dufourii* (DC.) Gueidan & Cl. Roux) FR: Carrington (in Miall & Carrington 1862; Shackleton & Hebden 1892 as *V. malhamensis* Nyl.). Occasional on hard limestone including pavement (e.g. Highfolds).

V. elaeomeleana (A. Massal.) Arnold FR: James 1970. Occasional on submerged acidic cobbles in streams.

V. hochstetteri Fr. FR: Sinker 1960. On limestone and mortar, perhaps more often in shady sites; probably frequent, but overlooked.

V. macrostoma DC. f. *macrostoma* FR: BLS Workshop 2017. On steep limestone; uncommon.

V. macrostoma f. *furfuracea* B. de Lesd. FR: Seaward 2011. Occasional on mortar and calcareous stonework.

V. muralis Ach. FR: Graham 1965. On shaded limestone and walls; uncommon.

V. murina Leight. FR: Shackleton & Hebden 1893. Occasional on hard, often shaded, limestone (e.g. Watlowes).

V. nigrescens Pers. (incl. f. *tectorum* (A. Massal.) Coppins & Aptroot). FR: Laundon 1954. Common on limestone, especially where subject to prolonged wetting, and occasionally on other rocks subject to base enrichment.

V. obfuscans Nyl. FR: Powell 2017. On stones among mine spoil at Mine Rakes; rare.

V. parmigerella Zahlbr. (syn. *Bagliettoa parmigerella* (Zahlbr.) Vězda & Poelt) FR: Powell 2017. On flat limestone slabs (e.g. Highfolds, Chapel Fell and above Malham Cove); widespread and locally frequent.

* *V. phaeosperma* Arnold FR: BLS Workshop 2017. Parasitic on crustose lichens on limestone; local and occasional (e.g. Highfolds, Watlowes and Comb Hill).

V. pinguicula A. Massal. FR: Shackleton & Hebden 1892. On limestone outcrops including sheltered boulders and rocks near to the ground; occasional, but recently seen at Watlowes, Highfolds Scar, Cowside Beck and Comb Hill.

V. praetermissa (Trevis.) Anzi FR: Wade & Clement 1957. On inundated rocks; rare, but recently seen near Comb Hill.

V. viridula (Schrad.) Ach. FR: Shackleton & Hebden 1893. Occasional on limestone and mortar, often in walls or on steep surfaces.

Vezdaea acicularis Coppins FR: BLS Workshop 2017. On soil at Mine Rakes; rare.

V. aestivalis (Ohlert) Tscherm.-Woess & Poelt FR: Pentecost 1999. On decaying *Weissia* on zinc-rich mine spoil and at Mine Rakes; rare.

V. leprosa (P. James) Vězda FR: BLS Workshop 2017.

On mossy soil at Mine Rakes; rare.

Violella fucata (Stirt.) T. Sprib. (syn. *Mycoblastus fucatus* (Stirt.) Zahlbr.; *M. sterilis* Coppins & P. James) FR: Seaward 1985. On bark of young trees and on lignum of rain-leached trees; widespread and locally frequent.

Xanthoparmelia conspersa (Ehrh. ex Ach.) Hale FR: Sinker 1955. On acidic rock; rare.

X. mougeotii (Schaer. ex D. Dietr.) Hale (syn. *Parmelia mougeotii* Schaer. ex D. Dietr.) FR: Hailstone (in Whitaker 1805). A species of exposed acidic rock, but not seen since 1862.

Xanthoria aureola Oxner (as *X. calcicola* Oxner in Seaward & Pentecost 2001) FR: Seaward 1986. On nutrient-enriched limestone walls (e.g. Highfolds); scarce.

X. candelaria (L.) Th. Fr. (incl. *X. ucrainica* S. Kondr.) FR: Carrington (in Miall & Carrington 1862). Locally frequent on nutrient-enriched *Fraxinus*.

X. elegans (Link) Th. Fr. FR: Seaward 1986. On cement; rare, and no recent records.

X. parietina (L.) Th. Fr. FR: Sinker 1960. On nutrient-enriched boulders and farm roofs; locally common.

X. polycarpa (Hoffm.) Th. Fr. ex Rieber (syn. *Polycauliona polycarpa* (Hoffm.) Arup, Frödén & Søchting) FR: Seaward & Henderson 1999. On twigs of nutrient-enriched trees; scarce.

* *Zwackhiomyces physciicola* Alstrup FR: BLS Workshop 2017. On *Physcia caesia*; rare. New to Yorkshire.

The past and/or present status of the following 30 taxa in the Malham Tarn area have yet to be resolved:

Brigantiaea fuscolutea (Dicks.) R. Sant. FR: Carrington (in Miall & Carrington 1862). A terricolous alpine species unlikely to be found in the study area.

Buellia disciformis (Fr.) Mudd FR: Shackleton & Hebden 1893. A species of *Quercus* and *Fagus*; not seen since the original recording.

Calicium lenticulare Ach. FR: BLS Workshop 2017. Rare on wood on Chapel Fell; would be new to Yorkshire, but awaiting confirmation.

Caloplaca arcis (Poelt & Vězda) Arup FR: BLS Workshop 2017. Rare on calcareous stone; no doubt present, but awaiting confirmation.

Cladonia phyllophora Hoffm. FR: Carrington (in Miall & Carrington 1862). Details unknown; doubtful record.

Flavocetraria nivalis (L.) Kärnefelt & A. Thell (syn. *Cetraria nivalis* (L.) Ach.) Reported on a few occasions from the summit of Fountains Fell in the late 1950s; although no specimens exist, the record appears to be genuine (see Gilbert 2000, p.212), but detailed searches in the 1980s failed to find it.

Fuscidea cf. *praeruptorum* (Du Rietz & H. Magn.) V. Wirth & Vězda FR: Pentecost 2012. On sandstone supports below Tarn House veranda; rare. Material did not give the usual chemical reaction, but probably belongs here.

Graphina anguina auct. europ. FR: Carrington (in Miall & Carrington 1862). Probably *Graphis inustuloides* Lücking.

Icmadophila ericetorum (L.) Zhalbr. FR: Carrington (in Miall & Carrington 1862). No other records.

Lepraria cf. *membranacea* (Dicks.) Vain. FR: Gilbert 1963. On shaded acidic rocks; possibly this species, but no recent records.

** *Leptorhaphis epidermidis* (Ach.) Th. Fr. FR: Shackleton &/or Hebden (in Rotheray 1900). No other records.

Megalaria grossa (Pers. ex Nyl.) Hafellner FR: Shackleton &/or Hebden (in Rotheray 1900). An old forest species and most probably extinct.

Micarea subnigrata (Nyl.) Coppins & H. Kilias FR: Shackleton & Hebden 1893. No other records.

Mycobilimbia pilularis (Hepp. ex Körb.) Hafellner & Türk (syn. *Biatora sphaeroides* (Dicks.) Körb.) FR: Carrington (in Miall & Carrington 1862). No other records.

Ochrolechia tartarea (L.) A. Massal. FR: Carrington (in Miall & Carrington 1862). No other records.

O. turneri (Sm.) Hasselrot FR: Pentecost 1999. On lignum; rare. Since on lignum, likely to be *O. microstictoides* Räsänen.

Pachyphiale carneola (Ach.) Arnold FR: Carrington (in Miall & Carrington 1862). No other records.

Parmeliella triptophylla (Ach.) Müll. Arg. FR: Shackleton & Hebden 1893. Probably an error or extinct in the study area.

Pertusaria hymenea (Ach.) Schaer. FR: West 1883 (as *P. fallax* sensu auct. brit.). No recent records.

Physcia stellaris (L.) Nyl. FR: West 1883. No recent records, but probably present.

Pyrenocarpon thelostomum (Ach. ex J. Harriman) Coppins & Aptroot (syn. *Thrombium thelostoma* (Ach. ex J. Harriman) A.L. Sm.) FR: Shackleton & Hebden 1893. No recent records.

Pyrenula dermatodes (Borrer) Schaer. FR: Carrington (in Miall & Carrington 1862). Doubtful.

P. laevigata (Pers.) Arnold FR: Carrington (in Miall & Carrington 1862). No recent records.

Teloschistes flavicans (Sw.) Norman FR: Lees (1880). Not seen since first recorded.

Thelocarpon laureri (Flot.) Nyl. FR: Graham 1965. Habitat and status details of the single Malham record are unknown.

Trapelia glebulosa (Sm.) J.R. Laundon (incl. *T. involuta* (Taylor) Hertel) FR: James 1965. On damp acidic rock and stones; scarce.

Trapeliopsis glaucolepidea (Nyl.) Gotth. Schneid. The 1970 record has not been substantiated.

Umbilicaria deusta (L.) Baumg. FR: Carrington (in Miall & Carrington 1862). Not seen since first recorded.

Verrucaria cf. *dolosa* Hepp FR: Shackleton & Hebden 1893. Not seen since first recorded.

Zwackhia viridis (Ach.) Poetsch & Schied. (syn. *Opegrapha viridis* (Ach.) Nyl.) FR: Carrington (in Miall & Carrington 1862). No recent records.

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POSTSCRIPT

Since submission of this article it has been learnt that the Field Studies Council is closing the Malham Tarn Centre. Opened in 1947, it has provided 75 years of environmental education with courses for schoolchildren, university students and specialist courses for adults, all facilitated by the dedicated team of wardens, researchers, teachers and lecturers. The YNU has had a close and long association with the Centre, exemplified by Judith Allinson (YNU President 2020-21) who was Botany Tutor there from 1979-87 and who subsequently ran specialist courses (e.g. in sedges and grasses) up until this year. She writes: "When I was there the Centre had 14 members of staff including 4 teaching staff, and we could take 60 to 80 school students (though rather fewer adults). I estimate that maybe 150,000 people have stayed there over the years. Many universities carried out research and scientific papers were written about the area in the FSC journal *Field Studies*. It was a privilege to live there and wonderful to step out of the door and be in a grade 1 SSSI, Ramsar Site and National Nature Reserve, with its great variety of habitats, from calcareous tarn and streams to fen and acid bog, from limestone pavement and grassland to cliffs and woodland."

At a time when the biodiversity crisis is reaching equal prominence with that of climate change, it is highly regrettable that the Centre has had to be closed, particularly when a new GCSE in Natural History is scheduled for introduction to the school curriculum in 2025.

AM

Leaf-mining flies (Agromyzidae) new to the Yorkshire Diptera list : Part 5

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Introduction

Following Warrington (2017, 2018, 2019, 2021 and 2022), nine species of Agromyzidae are hereby added to the Yorkshire Diptera list.

Additions

***Agromyza ambigua* Fallén, 1823**
Treeton Dyke, SK4387, VC63, 20.vi.1987, leg. W.A. Ely.

***Agromyza conjuncta* Spencer, 1966**
Hessle, TA033272, VC61, 29.v.2022, 1♂ leg. B. P. Warrington.

***Aulagromyza trivittata* (Loew, 1873)**
Dinnington, SK537852, V.C63, 30.v.2002, leg. W.A. Ely.

***Liriomyza cannabis* Hendel, 1931**
FERA Science, SE695584, VC62, larval mines on *Cannabis* plant.

***Ophiomyia labiatarum* Hering, 1937**
Firbeck, SK571884, VC63, 10.v.2005, leg. W.A. Ely; Flatts Valley, SE428008, V.C63, 9.vi.2005 leg. W.A. Ely.

***Phytomyza autumnalis* (Hering, 1957)**
Willerby, TA048311, VC61, 12.x.2017, B. P. Warrington; Hessle, TA047260, VC61, 14.x.2017, B. P. Warrington; Hessle, TA018261, VC61, 22.xii.2017, B. P. Warrington; Hessle, TA031257, VC61, B. P. Warrington, 4.x.2021; Thorne, SE678131, VC63, 12.xi.2021, B. P. Warrington [all data relates to larval mines on *Cirsium* which later produced adults that were dissected to confirm identification].

***Phytomyza cineracea* Hendel, 1920**
Old Moor, SE4202, VC63, 25.v.2013, leg. J. Coldwell; Dodworth, SE3105, VC63, 5.vii.2013, leg. J. Coldwell.

***Phytomyza gymnostoma* Loew, 1858**
Otley, SE197452, VC64, 23.ii.2015; Sheffield, SK324885, VC63, 2.ix.2015; Northallerton, SE3794, VC62, 21.ix.2021 [all data relates to larval stage detected on Leeks or Onions (obtained from Royal Horticultural Society)]. Hessle, TA029273, VC61, 13.vii.2022, B. P. Warrington [puparia in Onions].

***Phytomyza virgaureae* Hering, 1926**
Gordale Scar, SD9164, VC64, 8.viii.2010, H. C. J.Godfray [adult reared from larval mine].

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Warrington, B. P. (2022) Leaf-mining flies (Agromyzidae) new to the Yorkshire Diptera list : Part 4. *The Naturalist* 147 (1109): 68-69.

YNU Excursion Reports 2022

Jervaulx Abbey & Jervaulx Park (VC65) 21 May 2022

INTRODUCTION (Terry Whitaker)

The YNU VC65 meeting to Jervaulx Abbey and Estate was very successful and a surprisingly large number of people attended, about two dozen from 16 affiliated societies. Most stayed on for the reporting meeting at the Cover Bridge Inn where refreshments were taken. The weather was forecast to be cool and mainly cloudy with occasional showers but, after a cold start, the sun came out strongly and it became more pleasant and Spring-like, sheltered from the stiff breeze.

The mature trees in the park are very impressive, especially near the Abbey, but the park grassland is very impoverished and overgrazed. However, in some enclosed areas on glacial gravel mounds (probably kames) there are few small patches of nice calcareous grassland. The fishing lakes were found rather poor for invertebrates, possibly due to infestation with the invasive Signal Crayfish *Pacifastacus leniusculus* introduced by the landowner's father. However the newly-returned Otters are slaughtering them in great numbers, so there may be hope. Several interesting species in the less common taxon groups were found including puffy, vein galls caused by nematodes on Mouse-ear Hawkweed *Pilosella officinarum*.

The afternoon was made more notable with a special overflight by a Lancaster bomber and a Spitfire. The reporting meeting was chaired by the past YNU President Judith Allinson, assisted by Terry Whitaker and the 24 people from 16 affiliated societies who shared their observations.

FLOWERING PLANTS

Several members made a list of 83 species of flowering plants but half the list was recorded from some limited areas of rich sward on the limey gravel hillocks found near the eastern end of the park. Only about ten plants from that area were recorded elsewhere and most of the grazed land was extremely depauperate. *Lactuca virosa* a medicinal plant with many vernacular names including Opium Lettuce, was an interesting plant seen in the abbey ruins. It was possibly introduced by the lay monks for use in their infirmary.

FERNS

Only six species were recorded: Maidenhair Fern *Adiantum capillis venrensis*, Brittle Bladder Fern *Cytstopteris fragilis*, Bracken *Pteridium aquilinum*, Common Polypody *Polypodium vulgare*, Hart's Tongue Fern *Asplenium scolopendrium* and, on the mortar of the Abbey ruins, Wall Rue *Asplenium ruta-muraria*.

MYCOLOGY (Jill Cunningham)

As it was not the time of year or habitat for most macro-fungi the low number was expected but the rusts and other micro-fungi were in their element. 49 fungal species were found in total around the Abbey walls and southern grounds to the two small lakes. There were 12 common macro-fungi recorded, such as Southern Bracket *Ganoderma australe,* mostly in the grounds around tree stumps. Firerug Inkcap *Coprinellus domesticus* was spotted growing out of its ginger thread mat of mycelium as well as grassland fungi such as Yellow Fieldcap *Bolbitius titubans*. 21 rust fungi were recorded, mainly from the Abbey wall area where *Puccinia pimpinellae* was in abundance on Greater Burnet Saxifrage *Pimpinella major*. The most notable rust was *Puccinia recondita* (agg.) on Common Meadow Rue *Thalictrum flavum* growing by the second lake (there are varieties of this rust on this host with alternate hosts on different grasses, hence 'aggregate'). Additionaly 15 micro-fungi were recorded mostly on living plant leaves. Incubation in a humid container brought out two Ramularias; *R. bistortae* on leaf spots on Common Bistort and *R. scolopendrii* on brown areas of Hart's Tongue Fern, both under-recorded. Two micro-fungi were bonus finds under the microscope, *Ampelomyces quisqualis* and *Tuberculina persicina*, hyper-parasites growing on the rusts.

Cramp Balls or King Alfred's Cakes *Daldinia concentrica* were present on several Ash trees which were also mostly suffering from the Ash Die-back disease. The two beautiful weeping Ash trees in the monastery cloister having already died.

BIRDS (Compiled by Charlie Fletcher, Jill Warwick & Dave Williamson).

Sixty species of birds were found throughout the day, a healthy total. Waders were well represented

with Common Sandpiper and Grey Heron on the river, along with a pair of Redshanks, several Oystercatchers and small numbers of Lapwings and Curlews. Two Pied Flycatchers and three Redstarts were singing, along with two Reed Buntings, and there were five species of warblers including Garden Warbler and Whitethroat. Five Little Egrets were on the river along with a female Goosander with three young. Two Mandarin Ducks were seen in flight. A Tree-creeper was seen carrying food, Nuthatches were calling in the woodland, Stock Doves were seen in fields by the river and a Tawny Owl was mobbed by several blackbirds in a patch of woodland. Raptors recorded included Common Buzzard and Kestrel.

The highest density of the smaller birds was observed near the buildings and many people eating their lunch were amused by a mob of Long-tailed Tits rampaging through the bordering bushes.

OTHER VERTEBRATES (Collated by Terry Whitaker)
Members walking by the artificial lake were amazed by the huge piles of Otter *Lutra lutra* spraints (see photo opposite) almost entirely made up of Signal Crayfish carapaces. Rabbits were seen and Mole hills were widely present.

LEPIDOPTERA (Terry Whitaker & Charlie Fletcher)
The YNU Lepidoptera Group was invited to trap on the Friday night and put out five M/V Robinson traps and two Actinic Heath traps. The trapping covered SE1785, SE1885 & SE1686 [just]. A cold night in May was never going to produce a large number of moths, so the total of 46 species trapped was considered a good haul under the circumstances. Puss Moth and Small Elephant Hawk-moth were appreciated by those attending the opening of the traps. Other good finds included Alder Moth and Green Silver-lines which are both new for the 10K square. Butterflies were scarce as it was rather cool and breezy but several common ones: Speckled Wood, Orange Tip, Green-veined White, Small Tortoishell and Red Admiral. A few more moths were noted during the day in SE1785. The Wall butterfly was flying as early as 06:30 in strong dawn sunshine and several more were seen throughout the day, mainly in the dry calcareous grassland near SE181856.

COLEOPTERA (Derek Whiteley)
No Coleoptera specialists attended the meeting but members made a number of casual records. Ladybirds included 7-spot, 14-spot, Harlequin, 22-spot, 2-spot, 10-spot and the less obvious Larch Ladybird *Aphidecta obliterata,* swept from pines and larches. Chrysomelidae included the Green Dock Beetle *Gastrophysa viridula* adults and egg rafts on dock, the Knotgrass Leaf Beetle *Chrysolina polita* and the Alder Leaf Beetle *Agelastica alni*. Cantharids (Soldier Beetles) included *Cantharis rustica* and *Cantharis livida*. It was good to find the Malachite Beetle *Malachius bipustulatus* in decent numbers, mostly swept from tall grassland, and the flower-loving longhorn *Grammoptera rufescens* was also quite common. The Red-headed Cardinal Beetle *Pyrochroa serraticornis* was also recorded.

DIPTERA (Derek Whiteley)
Highlights included the water snipe fly *Atherix ibis,* swept from waterside willows, and the scarce hoverfly *Parasyrphus nigritarsis* eggs found amongst batches of beetle eggs laid by the Green Dock Beetle. This appears to be a second VC65 record, the first being found only five days earlier at Wensley Bridge by the author. The Ransoms Hoverfly *Portevinia maculata* was found basking on a colony of Ransoms. There are very few post-2000 VC65 records so this is a significant record of a popular insect. The Common Copperback Hoverfly *Ferdinandea cuprea* was an exciting find on a sap-run tree trunk in the parkland. This is only the second record for VC65. Amongst the more common hoverflies *Cheilosia albitarsis sensu stricto* was common on buttercups, *Lejogaster*

metallina was swept in the Abbey garden and *Eumerus strigatus* in the gardens and parklands. Two species of stilt fly (Micropezidae) were found: *Neria cibaria* in the gardens and *Cnodacophora sellata* swept from conifer branches. Snail-killing flies (Sciomyzidae) included *Pherbellia cinerella* and *Limnia unguicornis*. *Phytomyza ilicis*, the Holly leaf miner, a fly in the family Agromyzidae whose larvae produce characteristic leaf mines, were present on most of the Holly trees.

Mating pairs of the common Spotted Cranefly *Nephrotoma appendiculata* (below) were abundant in the damp grassland at the eastern margin of the park. This well-marked cranefly is one of the so called 'Tiger' Craneflies, through its combination of yellow and black markings.

Left: Spotted Cranefly *Nephrotoma appendiculata.* *Right:* Otter spraint

Photos: Terry Whittaker

ORTHOPTERA (Derek Whiteley)
It was too early in the year for most Orthoptera but a colony of Slender Ground-hoppers *Tetrix subulata* on the muddy banks of the River Ure was a nice find. This record is pretty much on the northern edge of the main British range, although there are a few records further north. It has been expanding its range from south east England over the past 40 years or so.

HEMIPTERA (Jill Cunningham)
A few land bugs were recorded. They were the Spear Thistle Lace-bug *Tingis cardui*, the red and black *Cercopis vulnerat*a and *Deraeocoris lutescens,* a small predatory bug feeding on the Nettle Aphid *Microlophium carnosum*. The Horse Chestnut Scale *Pulvinaria regalis* was also recorded, on Walnut.

HYMENOPTERA Aculeata: Solitary Wasps, Bees & Ants (Andy Millard)
The largely overcast day with a decidedly cold wind was far from ideal for aculeates. Apart from common bumble bees the only other aculeates recorded were towards the east end of the park and comprised two colonies of the red ant *Myrmica rubra* and two species of mining bee, *Andrena fulv*a and *Lasioglossum villosulum*.

HYMENOPTERA, Parasitica (Bill Ely)
All parasitic hymenoptera collected during the excursion were forwarded to Bill Ely for identification. Diplazontinae: one male *Syrphoctonus tarsatorius* at the Abbey; one male *Promethes sulcator* at the Park; this ichneumon was collected at Jervaulx by Douglas Hincks in 1947. Both parasitise hoverfly larvae.

One female *Dichrogaster aestivalis* at the Abbey, the one hundredth Yorkshire record but only the second for VC65. It is common in the lowlands but rare on the North York Moors and the Pennines. A record from Baildon in SE14 is as far west as this and there are none beyond them. This ichneumon parasitises lacewing larvae.

One male *Alomya debellator* at the Abbey.

One male *Acrotomus succinctus* at the Abbey; this is the 45th Yorkshire record but only the second from VC65; only one record (from VC64) is further west.

One male *Hadrodactylus* at the Park, that is probably *H. flavofacialis* Horstmann, 2000 (best fit but not a perfect fit). This would be new to VC65 if confirmed; there are Pennine records from VC63 and VC64, including one further west than this.

AQUATIC ECOLOGY (Kate Wright & Rachel Heath)
Despite the large numbers of the introduced Signal Crayfish in the Second Lake at SE179854, a few invertebrates were observed; including the larvae of two species of unidentified damsel fly. Other invertebrates included Phantom midge larvae (*Chaoboridae*), the alderfly *Sialis lutaria* and a freshwater shrimp *Gammarus pulex/fossarum* agg. The Lesser Water-boatman *Corixa punctata* was abundant. Common Frog tadpoles were present in many of the water bodies.

OTHER INVERTEBRATES (Collated by Terry Whitaker and Derek Whiteley)
The group reported the Black Slug *Arion ater* agg. and the Brown Lipped Snail *Cepaea nemoralis*. An empty shell of the River Mussel *Unio tumidus* was collected and critically identified. The Lower Ure is a known site for this mollusc on the northern edge of its range and specimens were found earlier in the year just upstream at Ulshaw. A special search was made for the Lapidary Snail *Helicigona lapidica*, recorded here on a previous YNU meeting but not found on the day. It is becoming very scarce in the east of VC65 but still remains common and widespread in parts of Wensleydale and Swaledale.

The Limestone Woodlouse *Porcellio spinicornis* was quite frequent in limestone walls around the Abbey and in the parkland, often with its congener *Porcellio scaber*; also *Philoscia muscorum* and *Oniscus asellus*. Myriapods included the Variegated Centipede *Lithobius variegatus*, Western Yellow Centipede *Haplophilus subterraneus*, Crimson Spotted Snake Millipede *Blaniulus guttulatus,* which was common in the Abbey Gardens, Club-tailed Millipede *Cylindroiulus punctatus* and Common Spotted Snake Millipede *Protoiulus fuscus* were both found typically in dead wood.

The Nursery Web Spider *Pisaura mirabilis* in the grassland at the Eastern end of the Park was the only arachnid recorded.

COMMENTS ON CONSERVATION.
The grassland by the riverside is on freely-draining sediments and is not very productive as it is prone to drought. The river Ure is now subject to much larger flood events and the hard embankments are being gradually destroyed as new meanders start to develop. This results in large areas having much sand and gravel periodically deposited across the vegetation. These grassland areas are being used as temporary holding areas for a high stocking density of sheep and consequently are also greatly overgrazed. One way of providing a better environment could be to create a broad riparian corridor largely free from grazing animals.

River-wetland corridors can be formed where a high degree of connectivity between the surface (rheic) and subsurface (hyporheic) components of streamflow creates an interconnected system of channels, wetlands, ponds and lakes. They occur where the valley floor is sufficiently wide to accommodate a laterally unconfined river planform that may feature morphologically complex, multi-threaded channels with vegetated bars, islands and floodplains. This provides the benefits of 'rewilding' coupled with flood attenuation. However, this could reduce the availability of grazing, and as meanders migrate it will undoubtedly result in a gradual change/loss of farm acreage which would need to produce some financial benefits to the landowners to be a viable alternative.

ACKNOWLEDGEMENTS & THANKS
Thanks were given to the organiser Terry Whitaker and to the landowner Ian Burdon and the Burdon Family for allowing access and helping to make the day a success and also to the Cover Bridge Inn for allowing us to conduct the reporting meeting in its beer garden.

Leven Canal and Leven Carrs (VC61) 25 June 2022

INTRODUCTION (Africa Gómez)
We were lucky to enjoy a pleasant, if breezy day, with plenty of sunshine. Most of the 18 members attending, with a good representation of the Hull Natural History Society, convened at Sandholme Lane and we made our way westwards along the towpath on the north side of the canal, examining the marginal vegetation and hedgerows and being able to look into the water only at irregular intervals at angling spots. The marginal vegetation was indeed luxuriant and the white and yellow lilies were in blossom, giving a wonderful display.

At Waterloo Bridge the members that completed the long walk were greeted by Mike Coverdale and Chris McGregor (EA), who know the area very well and provided some historical background and management information. We greatly appreciated their time to show us the Leven Carrs area and for lifts to the starting point at the end of the excursion.

The only geological note was contributed by Colin Howes in the form of a glacial erratic in the village. See p197 for the full report.

BOTANY (Rohan Lewis)
The first part of the public footpath along the canal is now shaded by trees – one clump of Broad Buckler-fern *Dryopteris dilatata* was noted. The canal bank is overgrown with tall vegetation, mostly Common Reed *Phragmites australis*. There was one patch of Purple Small-reed *Calamagrostis canescens.* Some gaps allowed access to the water, which contained white and yellow water-lilies *Nymphaea alba* and *Nuphar lutea,* Shining pondweed *Potamogeton lucens* and non-flowering plants of Bladderwort *Utricularia sp.* and Spiked Water-milfoil *Myriophyllum spicatum.* Common Club-rush *Schoenoplectus lacustris* and Lesser Pond-sedge *Carex acutiformis* were also present.

Further west the bank is less shaded and less overgrown. Tufted Sedge *Carex elata,* Tubular Water-dropwort *Oenanthe fistulosa* and Skullcap *Scutellaria galericulata* (photo p222) were found in one area, with a single Almond Willow tree *Salix triandra.* Bottle sedge *Carex rostrata* and Blunt-flowered rush *Juncus subnodulosus* were also found here.

Progressing further, the towpath is drier and more open still, with Hemp Agrimony *Eupatoria cannabina* and Welted Thistle *Carduus crispus* along it, while Arrowhead *Sagittaria sagittifolia* and Greater Pond-sedge *Carex riparia* were additions to the aquatic flora. Meadow-Rue *Thalictrum flavum* and Yellow Loostrife *Lysimachia vulgaris* were in flower among the vegetation at the water's edge.

Due to the presence of ground-nesting birds, we were not allowed access to Leven Carrs SSSI, except for one pond, where Greater Bladderwort *Utricularia vulgaris* was flowering (photo below). A visit to this area when it is accessible later in the summer would be useful: several unusual plants were recorded here on the previous YNU excursion to Leven in July 1952.

Greater Bladderwort *Utricularia vulgaris* in the SSSI pond.

Photo: Africa Gómez

Skullcap *Scutellaria galericulata*.

Photo: Helen KItson

MAMMALS (Colin Howes)

Four Brown Hares were seen at the end of the trip. Sadly CH's ageing bat detector finally fell to bits and wouldn't function, so he had to abandon his intended bat survey. Mole hills were dotted along the canal-side path and a fresh trail of Mole crossed mud/silt of Holderness Drain at Far Fox footbridge. Hedgehog road casualty specimens were noted on West Street and North Street, Leven. Signs of grazing and trails of Roe Deer through canal-side vegetation.

BIRDS, AMPHIBIANS AND REPTILES

70 years ago to the month was the last YNU excursion to Leven Canal. According to the YNU report 'over 30' bird species were seen, the most notable being Quail, Turtle Dove, Lesser Redpoll, and Spotted Flycatcher, all of which have declined or become lost to the region since. Over fifty bird species were listed during this visit, including Cetti's Warbler, Little Egret, Cattle Egret (only seen by a lucky few!), Buzzard and Marsh Harrier. These birds were rare or unknown at the time of the previous YNU visit reflecting the dynamism of bird fauna brought about by habitat changes, but also by global warming.

A Grass Snake of medium size crossed Waterloo Bridge when we were watching dragonflies, a second individual was seen at the end of the trip.

ODONATA

In the report of the 1952 excursion, Ainsworth notes "stopping now and again to admire the beauty of the blue dragonflies". A very interesting comment, given that at that time the Odonata fauna of Holderness was notably poor, with about nine breeding species. Leven Canal has been well recorded since, as it is one of the local strongholds of the Hairy Dragonfly. Alongside the River Hull we recorded a total of 10 Odonata spcies, including Hairy Dragonfly, Red-eye Damselfly, Ruddy Darter, Four-spotted Chaser, Black-tailed Skimmer, Emperor (ovipositing) and Banded Demoiselles. Large Red Damselfly, an early species, was noted in a recce visit a few weeks before. Five of these species would have been unknown in 1952.

HYMENOPTERA (Andy Millard)
Attention was focused on the path along the north side of the canal, westwards as far as the footbridge and disused Far Fox aqueduct. Quite large numbers of Honey Bees *Apis mellifera* were noted, indicating hives nearby, and there were reasonable numbers of the common bumble bee species, including the cuckoo *Bombus vestalis*. The solitary wasp *Argogorytes fargeii*, most recent Yorkshire records for which have been in the East Riding, was found foraging on *Heracleum sphondylium*, along with a Pimpline Ichneumon, possibly *Polspincta*. Richard Shillaker found a Figwort Mason Wasp *Symmorphus gracilis* (photo below) close to Figwort with the larvae of the Figwort Weevil *Cionus scrophulariae*, a major food source. A colony of the common ant *Formica fusca* was found by the disused aqueduct.

Left: Figwort Mason Wasp *Symmorphus gracilis.* *Photo: Richard Shillaker*
Right: A bachine Ichneumon wasp preparing a caterpillar for predation.
Photo: Helen Kitson

COLEOPTERA
Flotillas of Whirligig beetles, *Gyrinus* sp. were observed on the canal itself. We recorded the wonderful Longhorn Beetle *Rutpela maculata* and Wasp Beetle, *Clytus arietis* on Hogweed. Of note was to find Figwort Weevils, *Cionus scrophulariae/alauda*, both larvae and pupal coccons. Both species are common in the East Riding and may even occur together on the same plant.

LEPIDOPTERA
Highlights included a Hummingbird Hawkmoth feeding on honeysuckle. Others moths included a Snout, *Hypena proboscidalis,* Beautiful China-mark Moth, *Nymphula nitidulata* and the micromoth *Crobipalpa costella* as a Leaf Mine in Woody Nightshade *Solanum dulcamara* leaf. No moth-trapping took place. As for butterflies, a Painted Lady and a Red Admiral were found basking on the footpath. Eleven common butterfly species were on the wing.

DIPTERA (Andrew Grayson)
The day was affected by a persistent moderately-strong warm breeze; however, the recording area, being effectively a long linear path fringed by tall *Phragmites* on its canal side, and woodland edge type vegetation on the other, was sufficiently sheltered to provide near optimum conditions for recording most invertebrate groups. Regrettably, the writer forgot to bring a net: this being the first time that he had done so in nearly fifty years of invertebrate collecting! My recording was therefore mainly restricted to field records and was biased towards some of the larger and

more conspicuous flies. The resultant Diptera list consisted of common and widespread species, including the distinctive hoverfly *Episyrphus balteatus*, which was particularly abundant, and the large hoverflies *Volucella bombylans* and *V. pellucens*. The list from collected material included the Acalyptratae flies *Pegoplata infirma*, *Morellia aenescens*, *Phaonia incana*, *Calliphora vicina*, *Lucilia caesar* and *Protocalliphora azurea*. A female of the local soldierfly *Stratiomys singularior* was photographed by Richard Shillaker, and noticed by several other attendees of the meeting. Colin Howes' list included leafmines of *Phytomyza lappae* in Lesser Burdock and *Aulagromyza cornigera* in Honeysuckle, blotch mines of *Pegomya bicolor* on Broad-leaved Dock, and the galls of *Dasineura urticae* on Common Nettle.

Strensall Common Military Training Area (VC62) 9 July 2022

INTRODUCTION (Sarah White)

We were lucky enough to have a glorious sunny day for the excursion and there was an excellent attendance of 43 people. The moth traps had been set the previous evening and those arriving early were able to see the catch being identified and counted. In addition, a group was guided by Yves Bouvet to see the speciality of Strensall Common, the Dark Bordered Beauty Moth *Epione vespertaria* (photo opposite). There were two other guided tours, one general interest walk led by Peter Reed and a specialist dragonfly and damselfly walk with Keith Gittens. A special request was made by Vicky Wilkins of the Species Recovery Trust for members to look for the Tormentil Mining Bee and its nomad, last recorded in 2008 and 2009 respectively. Unfortunately neither was found.

At 4pm a group of 24 members, representing 10 affiliated societies, gathered at Strensall Village Hall for the tea and reporting meeting chaired by Terry Crawford. The Excursion had been organised with the kind permission of the MOD, Forestry England and Yorkshire Wildlife Trust. I would particularly like to record my grateful thanks to Major Paddy Ennis (MOD) and local naturalists Peter Reed and Yves Bouvet who generously gave their time and expertise in helping to organise this very successful and enjoyable event.

A group of YNU members at Strensall Common amongst the effects of heat and drought.
Photo: Joyce Simmons

GEOLOGY (Mike Ridealgh)

The solid geology of the Strensall area is made up of the Triassic age Mercia Mudstone group and extensive areas are covered by a thick layer of glacial and outwash deposits up to 7 metres thick called the Sutton Sand Formation. These superficial layers, ranging in age from Devensian (75,000

years BP) to Holocene (11,600 years BP) were initially laid down as glacial till and then more recently by meltwaters as lacustrine clays, sands and gravels while temporary lakes built up behind the York moraines. Wind-blown sand also contributed to form a complex mosaic of areas of clays and sands. The clay areas tended to be lower and so ponds could form and peat deposits develop. The nature of the water channels meant that in some places, sands and gravels formed slightly higher areas bordering the clay areas where the peat deposits are.

FLOWERING PLANTS (Sarah White and Gill Smith)

Several botanists contributed to the list and the Pillwort Pond and Kidney Pond were found to be particularly rich. Notable plants were Lesser Skullcap *Scutellaria minor*, Marsh St John's-wort *Hypericum elodes*, Bird's-foot *Ornithopus perpusillus*, Marsh Gentian *Gentiana pneumonanthe* (one very early plant in flower! (see photo below), Water-purslane *Lythrum portula*, Tubular Water-dropwort *Oenanthe fistulosa,* Floating Club-rush *Eleogiton fluitans*, Bog Pimpernel *Lysimachia tenella* and Lesser Water-plantain *Baldellia ranunculoides*. Marsh Stitchwort *Stellaria palustris* was reported to be increasing at one of the ponds.

Unfortunately, no Pillwort *Pilularia globulifera* was found at the Pillwort Pond which has in recent years been the main site for this plant. However, later in the season (11.11.2022), Anne Carter from the Freshwater Habitats Trust and Barry Wright from the Yorkshire Fern Group, returned to Strensall and were able to confirm that Pillwort is still present at two ponds where it was transplanted in 2018/19.

Left. The only Marsh Gentian found on the day. *Photo: Paul Simmons*
Right: Male Dark Bordered Beauty moth *Epione vespertaria* on the fencing around its food plant's cattle-proof enclosure. *Photo: Ken White.*

PLANT GALLS (Sam Buckton)

Tom Higginbottom pointed out that having four people (himself, me, Jill Cunningham and Sam Newton) actively looking for plant galls on a YNU excursion must be a record! For most of the day we recorded in separate groups, so between us we covered a large portion of the Common. Tom and Jill had a more in-depth search across areas nearer the car park, whilst I embarked on a long, hot but thoroughly enjoyable trek across the wider Common with the 'Odonata group'. Sam Newton was present for the first half of the day. We ended up with a moderate overall list of 54 gall-causers (for comparison, the 10-hectare St Nicholas Fields in York has over 150 gall-causer species

recorded over several years of intensive surveying). Our list included 16 gall mites (Eriophyidae), 14 gall midges (Cecidomyiidae), seven fungi, a rather poor six gall wasps (Cynipidae), three sawflies (Tenthredinidae), two root-maggot flies (Anthomyiidae) and psyllids and one picture-winged fly (Tephritidae), adelgid and fungus.

Much of the Common is dominated by Pedunculate Oak *Quercus robur* and both Silver *Betula pendula* and Downy Birches *B. pubescens*. These can be very productive trees for galls, although the oaks were a little disappointing; in terms of gall wasps, they yielded only Cola-nut Galls (caused by the agamic generation of *Andricus lignicola*), Bark-galls (*A. quercuscorticis* f. agamic), Oak Apples (*Biorhiza pallida* f. sexual), Red-pea Galls (*Cynips divisa* f. agamic), Blister-galls (*Neuroterus numismalis* f. sexual, whose agamic generation causes the more familiar Silk-button Galls), and young Common Spangle Galls (*Neuroterus quercusbaccarum* f. agamic). An interesting find on Silver Birch was a potential gall of the first generation of the midge *Massalongia betulifolia*, which seems to be poorly recorded. It is a subtle circular blister in the leaf blade. It would be ideal to see the causer itself to confirm this record, which would be the first for VC62. Witch's Brooms (also known as Birch Besom) were also present on Silver Birch – these are likely to be associated with the fungus *Taphrina betulina*, although there may be other causers of these types of gall.

Various other trees were present, particularly near the car park, and these boosted the gall diversity. For instance, Jill/Tom recorded Woolly Aphid *Eriosoma lanigerum* and erinea (felt-like galls) of the eriophyid mite *Phyllocoptes malinus* on Crab-apple *Malus sylvestris*, and erinea of *Aceria pseudoplatani* (also an eriophyid) on Sycamore *Acer pseudoplatanus*. I have recently produced a new key to erinea on *Acer* in Britain (freely available on the British Plant Galls Facebook group: see https://www.facebook.com/groups/1649308048444607/files/docs) that tries to clarify what is an exceptionally confused situation. There are many more erineum-causers on *Acer* than we traditionally record; *A. pseudoplatani* erinea are distinguished by their sausage-shaped hairs and the fact that they usually cause bulging of the leaf and are situated away from the main veins. A similar erineum, apparently also common in Yorkshire, which has mushroom-shaped hairs, is typically directly adjacent to main veins and does not cause bulging, is caused by *A. pseudoplatanea*. Various galls were also recorded on Alder *Alnus glutinosa*, Hawthorn *Crataegus monogyna*, Beech *Fagus sylvatica*, Ash *Fraxinus excelsior*, Aspen *Populus tremula*, White Willow *Salix alba*, sallows, Elder *Sambucus nigra* and Rowan *Sorbus aucuparia*.

Ferns are also obvious components of heathland, mainly in the form of Bracken *Pteridium aquilinum*, where we found the delightful Little Black Pudding galls (swollen and blackened pinnules) caused by the midge *Dasineura pteridis*, as well as curled-up pinnae caused by the root-maggot fly *Chirosia grossicauda* (which is technically a leaf-miner as well as a gall-causer). I also found a Mop-head Gall caused by *C. betuleti* on Broad Buckler-fern *Dryopteris dilatata*. We found few galls on herbaceous flowering plants, which is probably partly due to the fact that these are often less obvious than those on trees and tend to require slower, more careful searching. Nonetheless, we found galls such as rolled-up leaves on Cleavers *Galium aparine* caused by the mite *Cecidophyes rouhollahi*, Nettle Clustercup Rust on Common Nettle *Urtica dioica* and the hairy pouches of *Jaapiella veronicae* (a midge) on Germander Speedwell *Veronica chamaedrys*.

However, the most interesting finds of the day were on trees. A new gall for me was the bright-red globular gall of the sawfly *Euura collactanea* on Creeping Willow *Salix repens*, which I noticed at the Dark Bordered Beauty enclosures. It was here that Sam Newton spotted terminal leaf rosettes also on Creeping Willow – the causer of these is currently recorded as the midge *Rabdophaga rosaria*, although it is suspected that the type on Creeping Willow may be a distinct as-yet-unnamed species.

I also found 'true' *R. rosaria* galls on White Willow at the Kidney Pond. Finally, Jill found an erineum (and corresponding leaf bulge) on Aspen that she gave me to check. Based on the shape of the erineum hairs, this gall is caused by *Aceria varia*, a much scarcer mite than the similar *Phyllocoptes populi*. Jill's record appears to be the first for VC62 and only the second for Yorkshire, as well as one of only a small handful of records known in Britain, although it may well be greatly under-recorded on account of the microscopic checking required.

MYCOLOGY (Jill Cunningham)

Due to the time of year and dry weather there were few large fungi around. Hoof Fungus *Fomes fomentarius*, was on many a fallen birch trunk and a few, just identifiable, remains of dried up crusts were found on logs. However, a highlight was the sight of a black, cracked large eruption from a fallen birch trunk – Chaga *Inonotus obliquus*! This is classed as a 'rare find, more common in Scotland', although it does seem to be on the increase. I have recorded it just once before at a NEFSG meeting. (It is reputed to reduce inflammation, fight cancer, lower blood pressure, etc.). I was nearly fooled by a small cluster of golden 'eggs' clinging on to a grass blade - it turned out to be the slime-mould *Leocarpus fragilis*.

During the Covid restrictions I delved into the micro-fungi growing on plants, so whilst on this walk I gathered samples along the way. Most mildews are host specific and a quick Sellotape slide under the microscope confirms the IDs whilst other leaf spots are damp-boxed overnight to encourage colony growth and the results can be problematic or unexpected. Many fungi are very common but under-recorded (as brown spots on leaves are not that 'exciting'), although *Cercospora violae*, with just 2 records on NBN Atlas, appears to be a rare find on violet leaves. In all 8 main fungi were recorded (including the slime-mould) as well as 22 micro-fungi. In another month or season there will be a lot more to be found on this site.

LICHENS (Ian Instone)

In the area explored only a small number of lichens were found. The tall coniferous trees produced a lot of shade, not conducive to lichen growth. However, *Lepraria incana*, one of the very few lichens that appear to prefer shady sites, was found growing on bark on the bottom metre of several large pines. Small patches of *Xanthoria parietina* (the colour of this lichen can vary considerably, from a greenish grey in the shade to bright orange where it is exposed to bright sunlight) and *Physia tenella*, a grey lichen, were both found on the trunk of a large oak. One of the branches was low enough to examine where a very young specimen of *Ramalina farinacea*, along with *Parmotrema perlatum* and *Hypogymnia physodes*, were found. This implied there was a lichen flora higher up in the canopy where there was a bit more light but too high to see. At the edge of the woodland there were some younger Silver Birches and on some of the twigs that had broken away from high up in the tree and fallen to the ground, *Amandinea punctata* and *Lecanora chlarotera* were found.

Finally, returning to the car park, we found a very poorly young Ash tree. Many of the young branches on the tree were dead and covered with the very yellow form of *Xanthoria parietina.*

BIRDS (Ken and Sarah White)

Detailed bird surveys of the Common, including numbers of territories etc, are carried out annually by Peter Reed; our observations on the day of the Excursion represent only a snapshot of the overall picture. Moreover, July is a somewhat quiet month for birds but nevertheless a total of 36 species was recorded. Notable observations were singing Tree Pipit with at least 4 or 5 territories still occupied; at least two pairs of Stonechats with juveniles; a pair of Woodlark near the entrance to World's End; a pair of Spotted Flycatchers; at least 5 singing Reed Buntings with one carrying food.

Other singing birds, indicating possible breeding, included Treecreeper, Dunnock, Linnet, Willow Warbler, Chiffchaff, Coal Tit, Wren, Goldcrest, Blackbird, Garden Warbler, Stock Dove and Skylark. Several adult Buzzards were seen together with three juveniles. Further evidence of breeding was provided by a Chaffinch carrying food as well as juvenile Great Tits, Jays and Swallows.

OTHER VERTEBRATES (Sarah White)
Rabbit, Roe Deer and Fox were all seen and there were signs of Grey Squirrel and Mole activity. There was also evidence of Water Voles eating vegetation at the Kidney Pond.

A particular highlight was an Adder seen close by the track in the car park just as we were packing up for the day. Other observations were a lizard (probably Common Lizard), newts (possibly Great Crested), tadpoles at World's End and Common Frog at Kidney Pond.

MOTH TRAPPING (Charles Fletcher)
The YNU lepidoptera group was invited to trap on the Friday night and several MV, actinic and LED traps were spread across various areas to try and cover a range of habitats. The final total of 205 species was a good effort. It was encouraging to record 14 new ones for Strensall Common, 13 of which were new for the 10K square SE66. None were great rarities but these are important records as they all help put dots on distribution maps. The site list now stands at 623 species.

Many moths which are very local across the county have healthy populations at Strensall, and this was reflected in the catch. For example, Plain Wave *Idaea straminata* (16 trapped), Satyr Pug *Eupithecia satyrata* (12), Pine Hawk-moth *Sphinx pinastri* (7), Four-dotted Footman *Cybosia mesomella* (53) and Striped Wainscot *Mythimna pudorina* (61). Some others are more common in upland habitats but also occur on lowland heaths, so it was good to record significant numbers of Lempke's Gold Spot *Plusia putnami*, Light Knot Grass *Acronicta menyanthidis* and Fen Square-spot *Diarsia florida*.

Strensall Common's most famous moth, Dark Bordered Beauty was rather shy in coming to light; just one was in a trap. Other interesting macro moths included three Oak Eggars *Lasiocampa quercus*, Maiden's Blush *Cyclophora punctaria*, Oblique Carpet *Orthonama vittata,* Grass Emerald *Pseudoterpna pruinata*, Clouded Buff *Diacrisia sannio* and Bird's Wing *Dypterygia scabriuscula*. Amongst the microlepidoptera there were no great rarities; however it was encouraging to record *Carpatolechia alburnella* along with good numbers of *Pempelia palumbella* and *Aristotelia ericinella.*

DAYTIME LEPIDOPTERA (Terry Crawford)
Eleven species of butterflies were reported. Both Small and Large Skippers were present and the tips of the antennae of some of the Small Skippers were closely examined in vain for the jet-black pigmentation on the under-surface that is indicative of the Essex Skipper currently spreading northwards in Yorkshire. Green-veined White, a single Purple Hairstreak in the oaks near the car park, Small Copper, Painted Lady and a single Silver-washed Fritillary were all reported. The Fritillary was flying in the wooded area adjacent to the Kidney Pond and, although this butterfly is currently spreading in Yorkshire, this one was probably a wanderer; time will tell. Among the "browns" there were plenty of Gatekeeper, Meadow Brown, Ringlet and Small Heath. The advance of Gatekeeper over the last three decades seems to have stalled in this middle area of Yorkshire, probably because of the increasing altitude of the Howardian Hills and beyond them the North York Moors. The colonies on Strensall Common and at adjacent World's End could be important sources should further northwards advance become possible. The Small Heath has recently been moved into the butterfly "Red List" as Vulnerable, increasing the importance of the rather isolated lowland colonies

on the Common and at World's End.

Dark Bordered Beauty is more commonly seen during daytime: 16 were found earlier on the Friday and at least 12 on the day of the excursion. A monitoring transect has been walked since 2007, the route passing through the then areas of concentration of the moth. In recent years numbers on the transect have significantly declined for reasons that are not wholly clear. Elsewhere on the Common there are patches where numbers are more buoyant, as seen during the excursion. Some butterfly species show a "metapopulation structure" of distinct colonies separated by unsuitable habitat but joined by occasional migration. Some colonies may go extinct but be reseeded by migrants, or new colonies could be founded and the whole metapopulation persists. Might this be how Dark Bordered Beauty behaves? Other moth sightings during the day were an Emperor Moth *Saturnia pavonia* larva, a Beautiful Yellow Underwing *Anarta myrtilli*, a Common Wave *Cabera exanthemata* and a brilliantly green Large Emerald *Geometra papilionaria* which is mostly nocturnal but sometimes seen flying on the Common on sunny days. Walkers, seeing my net, have asked me the name of the large green butterfly they have seen!

DRAGONFLIES (Keith Gittens)
In total six ponds were visited through the day (though one was dry). Pond names and numbers refer to the Freshwater Habitats Trust Flagship Pond Map for Strensall Common. Conditions were warm and sunny.

Pond 1 (Dog Pond): This sheltered pond had a good level of Odonata activity with 10 species recorded including a stray Banded Demoiselle *Calopteryx splendens*. There were signs of emergence with the finding of a fresh teneral Common Darter *Sympetrum striolatum*.

Pond 13 (Kidney Pond): This pond has well-vegetated margins which limited access to the water's edge. In total 5 species were recorded including Ruddy Darter *Sympetrum sanguineum*.

Ponds 19/20 (World's End South): Several were noted to be ovipositing including Brown Hawker *Aeshna grandis* and Emperor *Anax imperator*. A small number of Red-eyed Damselfly *Erythromma najas* males were also seen out in the middle of pond 20. In total 11 species were recorded.

Pond 10 (World's End North): A brief visit at this pond due to time restrictions. A total of 9 species recorded including a second record for this pond of Black-tailed Skimmer *Orthetrum cancellatum*.

Left: Emperor dragonfly *Anax imperator* ovipositing. *Photo: Paul Simmons*
Right: Galls of the cecidomyiid midge *Anisostephus betulinus* on Silver Birch. *Photo: Ken White*

It was surprising not to find either Common *Aeshna juncea* or Southern Hawker *Aeshna cyanea* on the walk as both are known from the common. Overall numbers per species were average at best.

COLEOPTERA (Sarah White)
A number of interesting beetles were found, including Thistle Tortoise Beetle *Cassida rubiginosa* larvae on Creeping Thistle *Cirsium arvense,* Alder Beetle *Agelastica alni* adults and larvae, Poplar Beetle *Chrysomela populi* feeding on Aspen *Populus tremula* ground shoots, Birch Leaf Roller *Deporaus betulae,* characteristic half-cut leaf cones on birch and Alder, Four-banded Longhorn Beetle *Leptura quadrifasciata*, one near the pond close to the car park and a second near the World's End boundary, Black Snail-hunter *Phosphuga atrata*, single individual on the main sandy track, a pair of Glow Worms *Lampyris noctiluca,* Great Diving Beetle *Dytiscus marginalis,* Green Tiger Beetle *Cicindela campestris* and a *Nicrophorus* carrion beetle in a light trap.

HYMENOPTERA (Andy Millard)
Bees generally were in very short supply with just occasional common bumble bees. A Hornet *Vespa crabro* was caught in one of the moth traps set near the railway line and two further wasps, a female *Lindenius albilabris* and a male *Myrmosa atra,* were recorded. The latter, the female of which is wingless, is a parasite of ground-nesting crabronid wasps and halictine bees. The very common ant *Lasius niger* agg. was recorded from a dead log. Two ichneumon wasps taken were identified by Bill Ely as female *Lissonota* (*Lampronota*) *biguttata* Holmgren, 1860, which previously has only been recorded twice in VC62, in 1944 and 1945.

DIPTERA (Cliff Wilton)
Observations of Diptera were made on a sight-only basis with no beating or collecting of specimens. It was noticeable and disappointing that the very hot weather appeared to depress the numbers of visible and active flies, even in families with many common ones. Hoverflies were the most active, with *Eristalis pertinax, E. tenax, Eupeodes luniger* and *Helophilus pendulus* the most frequently seen. A single *Sericomyia silentis* was a nice find. Other common ones included the conopid *Sicus ferrugineus*, a single long-legged fly *Dolichopus popularis* and Downlooker Snipe Fly *Rhagio scolopaceus*, the last two near water. Perhaps the most striking find was a number of scorpion flies *Panorpa communis*, both males and females, basking on the leaves of rhododendrons around the dragonfly pond nearest the excursion car park. I did not see the rare muscid Hairy Canary *Phaonia jaroschewskii* (found at Strensall in 2018) which was a further disappointment.

HEMIPTERA (Jill Cunningha**m**)
Woolly Beech aphid *Phyllaphis fagi* and Forest Bug *Pentatoma rufipes* were recorded.

SPIDERS (Jim Pewtress & Geoff Oxford)
Despite a hot dry day, 35 spiders and four harvestmen were identified. Six spiders were new to the site: *Parasteatoda lunata, Parasteatoda simulans, Simitidion similis, Amaurobius similis, Ozyptila praticola* and *Agyneta saxatilis sens str.* The four harvestmen were *Opilio canestrinii, Leiobunum rotundum, Oligolopus hanseni* and *Mitopus morio.* Some had not been recorded since Clifford Smith's surveys from the late 1970s to the mid-1980s, with *Tenuiphantes* last recorded in 1961. The sites searched included the area around the Kidney Pond, heathland, woodland and not forgetting the corrugated shed near the car park, which produced new site records for three spiders and two harvestmen. Later Geoff found *Steatoda nobilis* on the outside wall of the village hall, a spider slowly moving north.

ADVICE ON CONSERVATION/MANAGEMENT (Terry Crawford and Sarah White)
The majority of Strensall Common is a Military Training Area belonging to the MOD. Given that priority, the meeting was very impressed at the high level of support by the military for wildlife monitoring and conservation at this important site within obvious constraints arising from the training activities.

Considerable concern was expressed that the originally much larger Kidney Pond was drying out and becoming vegetated over. The consensus was that some of the vegetation cover should be cleared, carefully and sensitively, in order to ensure open water, as well as some of the shade being removed from the edge. It was recommended that this matter should be raised for further discussion at the MOD Strensall Conservation Group.

It was pointed out that there are still active land drains, a necessity imposed by using the site for military training but possibly not in the best interests of conservation. Should the pattern or scale of military activities be reduced in the future, then drainage to achieve an appropriate balance of wet and dry heathland habitats could be considered.

Brockadale YWT nature reserve (VC63) 23 July 2022

INTRODUCTION (Joyce Simmons)
Twenty two members visited Brockadale and 13 affiliated societies were represented. The temperature was a comfortable 24 degrees C in the morning, in contrast to the almost 40 degree heat suffered by the whole country earlier in that week. The extreme temperature, accompanied by a hot wind, had scorched the already dry vegetation.

Brockadale's varied habitats on north and south-facing calcareous slopes of meadow and woodland, with wet grassland bordering the River Went, supports over 2200 species, some of which are rare in Yorkshire and in the whole country.

Several members joined a walk round the reserve through the woodlands and meadows. A first this year for the reserve is a rust *Puccinia graminis* (photo p232) on the only Barberry *Berberis vulgaris* bush here. Barberry is now scarce because plants were removed from hedgerows in the past as this rust also infects wheat crops. Raspberry *Rubus ideaus* plants were bleached white and Elder *Sambucus nigra* leaves were shrivelled and brown on some bushes. This was unprecedented: I anticipated meadows purple with Clustered Bellflowers *Campanula glomerata*, Knapweeds and Scabious species, but sadly these were brown, dry and parched. There were some green places: north-facing slopes and woodlands which had been sheltered from the searing heat.

A possible 'skeleton' of a Frog Orchid *Ceologlossum viride* was photographed by Judith Allinson, but was too old to be certain. We have a 20-year old record for this plant in the same meadow, and there will be careful searches in spring for fresh specimens.

Butterflies had raced through their life-cycles, so few were flying though many of us saw Silver-washed Fritillaries close up (photo p232). Only 2 Marbled White butterflies were seen; it has been a poor year for them and for others which depend on nectar sources in July and August. A moth trap was set the night before so that some of the reserve's moths could be shown. These included Dark Umber *Philereme transversata britannica*, Nut-tree Tussock *Colocasia corryli* and the Brockadale speciality – Pretty Chalk Carpet *Melanthia procellata* at its only site in Yorkshire. Day-flying moths

were largely absent, again a consequence of the desiccated vegetation.

Left: Barberry Rust *Puccinia graminis* - a recent Brockadale find. *Photo: Judith Allinson*
Right: Silver-washed Fritillary which is now established in the reserve. *Photo: Paul Simmons*

Few birds were apparent, also undoubtedly escaping heat and drought. A Hobby was seen chasing Swallows.

The reporting meeting in the Kirk Smeaton Church was a welcome cool haven after the afternoon heat in Brockadale. My thanks to Carol Cessford, the churchwarden who facilitated our visit. I regret that the YNU meeting did not see Brockadale at its best, I can only hope that this is not a sign of conditions to be expected.

BOTANY (Kay McDowell)
On a very warm, dry day a group of us were led around part of Brockadale. Only a few days before temperatures were in the high thirties, and the intense heat had damaged some plants more than others, most noticeably Elder, seen along an unprotected south-facing hedge. Plants were also suffering from drought conditions following a dry winter, spring and summer. We were glad to see Misteltoe *Viscum album*, which was still green on the small trees near the car park.

Walking across the grassland towards the woodland we came across a small area of calcicoles on a slope including Small Scabious *Scabiosa columbaria*, Greater knapweed *Centaurea scabiosa* (which had been bleached by the sun) and Rock Rose *Helianthemum nummularium*.

In the woodland Wild Arum *Arum maculatum* was already in fruit, which seemed particularly early. We visited a field which was previously Elm *(Ulmus glabra*) woodland, but a victim of Dutch Elm Disease. A decision was taken to turn this field into calcareous grassland instead, which, after careful management is turning into a haven for butterflies. It includes 4 species of St. John's Worts: *Hypericum montanum* (Pale), *H. hirsutum* (Hairy), *H. pulchrum* (Slender) and *H. perforatum* (Perforate). We crossed the River Went to a north-facing meadow which has the tiny ferns Moonwort *Botrychium lunaria* and Adder's Tongue *Ophioglossum vulgatum,* as well as a wealth of other uncommon limestone plants. Unfortunately, a quarry will eventually reach the boundary of the reserve here. Dust monitoring is being carried out to ensure that the rare and delicate plants in this meadow are not harmed by dust from the mining operations.

SPIDERS AND HARVESTMEN (Geoff Oxford)

Only small numbers of spiders and harvestmen species were recorded during the YNU visit, no doubt a result of the recent extreme weather conditions. Even so, of the mere eight species identified on the Reserve, two were new hectad records, *Araneus quadratus* and *Clubiona reclusa.* Both are extremely common and widespread, which illustrates the woefully inadequate spider recording at Brockadale. The Labyrinth Spider *Agelena labyrinthica* had been recorded on the Reserve for the first time by Joyce and Paul Simmons just a week before the meeting. Ten or so webs were confirmed at a slightly different sub-site. This is a southerner moving northwards and is now well-established at several locations in South Yorkshire. Tea at Kirk Smeaton Church produced a further hectad record, *Parasteatoda simulans*, which seems to be increasing (or at least, increasingly reported) across Yorkshire. Two harvestmen were collected, *Dicranopalpus ramosus* and *Phalangium opilio*, both of which are new to the Reserve; the former is a new hectad record.

PLANT GALLS (Tom Higginbottom)

Evidence of gall wasps was discovered on acorns which showed distinctive spikes, early stages of the knopper gall *Andricus quercuscalicis*. Nearby were small immature Oaks, their buds were host to the Oak marble gall A. *kollari*. Some leaves showed tiny blisters of *Neuroterus numismalis* sexual generation. The later agamic generation forming the Silk Button gall will be common later in the year. There were the early stages of *N. quercusbaccarum*, small and red in colour, gradually they will transform into golden Common Spangle galls, often covering the underside of some leaves. Wasps had also caused the colourful Robin's Pin Cushion galls *Diplolepis rosae*, visible on some rose bush stems. The less common smooth ball-shaped Rose Pea gall *D. nervosa,* was found under a Rose leaf. A small colony of the sawfly galler *Blennocampa phyllocolpa* was discovered; leaflets had been rolled downwards forming loose tubes for the sawfly caterpillars. Goat Willow *Salix caprea* trees were host to sawfly gallers. Scars on the upper leaf surface indicated the hairy gall beneath formed by *Euura pedunculi*, while other upper surface leaves showed smooth oval-shaped *E. bridgmannii*. Bean shaped, reddish galls on leaves of Crack Willow caused by *E. pontania* were common. The midge gall *Dasineura fraxini* swelling the mid-vein of Ash *Fraxinus excelsior* leaves were seen frequently. Leaves of Beech *Fagus sylvatica* trees showed small but early stages of the midge galls *Hartigiola annulipes*. On Lime *Tilia x vulgaris* leaves were woody conical swellings on the upperside, with occasionally a cylindrical inner gall protruding from the cone formed by the midge *Didymomia tilacea*. Entomologist Dennis Giggal saw examples of the midge *Tephritis*, but no galls were discovered although many Burdock heads were examined.

Hard swellings on Black Knapweed *Centaurea nigra* flower heads formed by the fly *Urophora jaceana* were recorded. Green swellings on the stems of Creeping Thistle *Cirsium arvense* formed by *U. cardui* were seen on four different thistle hosts. Common mite galls were noted on Sycamore *Acer pseudoplatanus* and Field Maple *Acer campestris*. *Eriophyes tiliae,* a distinctive red nail gall were common on Lime leaves. A more unusual mite erineum gall, *Phyllocoptes malinus* was found on the underside of a leaf of an Apple species. The edge of Buckthorn *Rhamnus cathartica* leaves were thickened and rolled upwards by the psyllid gall *Trioza rhamni*. On some leaves were yellowish swellings of *Puccinia coronata*, a micro-fungus. In gardens in Kirk Smeaton, the edge of many Red Valerian leaves had been rolled upwards by the psyllid galler *Trioza centranthi.*

DIPTERA, COLEOPTERA, ORTHOPTERA, ODONATA, HEMIPTERA (Derek Whiteley)

Two robberflies were noteworthy. On the south facing grassy slopes the Brown Heath Robberfly *Machimus cingulatus* was swept in large numbers. On the north facing grassy slope the Kite-tailed Robberfly *Machimus atricapillus* was prevalent. Males of this species have a characteristic projection

on the end of the abdomen with a tuft of dark hairs resembling a kite's tail. This was demonstrated to members present.

Hoverflies included the large wasp mimic *Volucella inanis*, the rather smart-looking *Dasysyrphus albostriatus* and an assemblage of more common species.

A nice find amongst the soldierflies was the Yellow-legged Black *Pachygaster leachii* and the Dull Four-spined Legionnaire *Chorisops tibialis* in the wooded areas. The handsome Sieve-winged Snailkiller *Coremacera marginata,* a large and truly striking sciomyzid fly, was swept from grassland on the north-facing slope. It is a parasitoid of land snails.

There were no specialist coleopterists at the meeting but a number of casual records of beetles were made including 7-spot, 14-spot, 2-spot, 22-spot and Orange Ladybirds. The metallic green Thick-thighed Flower Beetle *Oedemera nobilis* was frequent – this is a recent colonist from southern England moving into Yorkshire within the past decade, and now well established. One of the orange-spotted species of sap beetle *Glischrochilus hortensis* was swept in the wooded area. Figwort Weevils *Cionus scrophulariae* were common on figworts.

Orthoptera included three species of grasshopper: Mottled Grasshopper *Myrmeleotettix maculatus* on short turf near rocky outcrops, Meadow Grasshoppers *Chorthippus parallelus* and Field Grasshoppers *Chorthippus brunneus* which were more widespread and common on the reserve. Common Ground Hoppers *Tetrix undulata* were found in damp mossy areas (a habitat where you would expect the Slender Ground Hopper *Tetrix subulata*) and an immature Oak Bush Cricket *Meconema thalassimum* swept from tree foliage was a very nice find.

Amongst the Odonata the highlight of the day was a count of around 50 Banded Demoiselles *Calopteryx splendens* along the river, mostly displaying males; a wonderful sight. A male Azure Damselfly *Coenagrion pulchellum* was netted and photographed in damp grassland.

Hemiptera included the Bishop's Mitre Shieldbug *Aelia acuminata,* a denizen of dry grassland and a relative newcomer to the Yorkshire fauna. The first published records are attributed to 2006, spreading from the south of England. It is now quite frequent in the county. An immature Ant Damsel Bug taken alive later proved to be *Himacerus mirmicoides,* another fairly recent addition to the Yorkshire fauna, first recorded in 2003.

HYMENOPTERA: PARASITICA (Bill Ely)
Specimens collected by Derek Whiteley were sent to Bill Ely for identification. These were all females and all but the first are new to the reserve:

Diplazon laetatorius which I collected here in 1982 and 2013; there are now over 250 Yorkshire records. *Mesoleptus laevigatus,* there are over 150 Yorkshire records; *Glypta (Glypta) nigrotrochanterata*, the fiftieth Yorkshire record; *Casinaria mesozostus*, the fourteenth Yorkshire record; *Diadegma erucato*, over one hundred Yorkshire records.

Humberstone Bank Farm (VC64) 13 August 2022

INTRODUCTION (Ken White)

Humberstone Bank Farm is situated at the head of the River Washburn Valley. It is a large upland farm with 904 hectares of moors and grazing land and is currently farmed by the tenant farmer Jon Grayshon, who took it over in 2016. It is farmed under a Higher Level Stewardship agreement and grazed by Swaledale sheep and Belted Galloway cattle. The farm is comprised of open moorland, enclosed semi-improved pastures and shelterbelts. The River Washburn runs in a steep-sided valley between the moorland and the in-bye land, giving rise to some waterlogged and marshy ground in the valley bottom.

Pockstones Moor seen from Humberstone Bank, showing the variety of habitats.
Photo: Ken White

The open moorland grazing land lies within West Nidderdale, Barden and Blubberhouses Moors SSSI, one of a series of moorland Sites of Special Scientific Interest in the North Pennines which are of international importance for their blanket bog and heather moorland vegetation communities.

This site is owned by Yorkshire Water and was the first farm to be signed up to its 'Beyond Nature' tenancy. This initiative supports their farm tenants to optimise the value of other important land uses such as providing a home for wildlife, storing carbon, offering opportunities for recreation, farming livestock and delivering natural flood management. This excursion supported the 'Beyond Nature' initiative by recording wildlife on the farm.

Despite the excursion being held during a prolonged spell of very hot and dry summer weather which was experienced over most of the UK, 20 members were present for the morning briefing, of which 10 managed to attend the afternoon Tea & Meeting, representing 9 of the affiliated societies.

GEOLOGY/GEOMORPHOLOGY (Ken White)
Almost all of Humberstone Bank Farm and adjacent land is made up of Carboniferous Millstone Grit, primarily sandstone with occasional layers of mudstone and siltstone. A narrow band of Cayton Gill Shell Bed of similar age runs along the southern edge of the site (BGS, 2022). The highest elevation of

the moorland is over 400m in the northwest and this gently slopes away to the south and southeast down through the pastureland, with small streams cutting narrow gullies such as Harden Gill and White Wham, all of which contribute to the River Washburn.

BOTANY (Sarah White)

The headwaters of the River Washburn flow between the farm in-bye land on one side of the valley and the open moor on the other. The habitats of the farm comprise semi-improved pasture and meadow, mixed plantations and extensive moorland common grazing land. The in-bye grazing land in the river valley below the farm contains frequent wet areas including marshy grassland, mainly acidic flushes and a pond, all of which support a good range of plants. Notable in the flushes were Cranberry *Vaccinium oxycoccos*, Round-leaved Sundew *Drosera rotundifolia*, Bog Asphodel *Narthecium ossifragum*, Cross-leaved Heath *Erica tetralix,* Heather *Calluna vulgaris* and several sedges including Star Sedge *Carex echinata*, Carnation Sedge *C. panicea* and Common Yellow-sedge *C. demissa*. The pond contains a stand of Bottle Sedge *Carex rostrata* and Bog Pondweed *Potamogeton polygonifolius* and above it is a very wet area of grassland supporting a good population of marsh orchids, all in seed at this stage of the year and not identifiable to species.

The vegetation of the moor is dominated by Heather, which was in full flower and a magnificent sight! Smaller areas are dominated by Common Cottongrass *Eriophorum angustifolium* and Hare's-tail Cottongrass *E. vaginatum*, Purple Moor-grass *Molinia caerulea* and Bracken *Pteridium aquilinum*. A few plants of Knotted Pearlwort *Sagina nodosa* (photo below) and a single large tussock of Spiked Sedge *Carex spicata* were found adjacent to the track.

Left: Knotted Pearlwort *Sagina nodosa*
Photos: Ken White.

Right: Adder at Harden Gill.

Chickweed Wintergreen *Lysimachia europaea* had been recorded from the farm in 2016 and again in 2018. A search in the very overgrown plantation adjacent to the road revealed that the plant is still there – indeed as many as 45 plants were counted in a 2m x 2m patch of *Festuca* grassland still remaining despite the advancing growth of brambles. However, many of the plants appeared not to have flowered so conditions might not be ideal especially in such a dry summer.

PLANT GALLS (Ken White)

It was only while photographing the many Small Heath and Small Copper butterflies flitting around that I suddenly noticed several "galls" of Ergot (of Rye) *Claviceps purpurea* growing on at least 2 grasses, Cocksfoot *Dactylus glomerata* and Timothy Grass *Phleum pratense*. The visible galls are the sclerotia in the life cycle of this ascomycete, which fall to the ground and overwinter and sprout

perithecia in the spring. These release ascospores which then infect the stigmata of the grass flowers in the following cool wet spring and grow in place of a seed.

LEPIDOPTERA - Moths (Charles Fletcher)
Members of the YNU Lepidoptera group were invited to set traps on the Saturday night. The areas targeted were the shelter belt of mixed woodland leading down to Humberstone Bank Farm, woodland where Hoodstorth Lane crosses the River Washburn, and heather moorland and grassland up towards Harden Gill.

The final list was just short of 100 species, a good haul from an upland site; 9 Golden-rod Brindle *Xylena solidaginis* was a good number for a moth which several members attending had never seen before, and other interesting upland moths included Striped Twin-spot Carpet *Coenotephria salicata*, Grey Chi *Antitype chi*, Barred Chestnut *Diarsia dahlii* and Neglected Rustic *Xestia castanea.* Single specimens of Barred Hook-tip *Watsonalla cultraria* and Vine's Rustic *Hoplodrina ambigua* were unexpected findings; both are spreading in the county.

There was some evidence of migrant activity with four Diamond-back Moths *Plutella xylostella* and a single Dark Sword-grass *Agrotis ipsilon* in the traps. The most interesting microlepidoptera were a *Denisia similella* caught at light and many leaf mines of *Phylloporia bistrigella* on birch. A larva of Northern Eggar *Lasiocampa quercus callunae* was found by day.

LEPIDOPTERA – Butterflies (Paul Millard)
After emptying the moth traps the weather conditions improved to the point that several members were able to take different routes covering much of the farm. A total of 13 species of butterfly were recorded including insects that are to be expected in upland habitat. The best of these were 5 Wall and 4 Dark-green Fritillaries in the Forest Road, Rabbit Crag-Hey Stack and Hoodstorth Allotments area. In the same heather moorland habitat there were good numbers of Small Heath and Small Copper. Also seen were Green-veined and Small Whites, Painted Lady, Peacock, Red Admiral and Small Tortoiseshell. Finally observations were made of a few late season Small Skipper, Ringlet and Meadow Brown. These are welcome records from an under-recorded area.

ODONATA (Graham Phillips)
There were hopes of moorland species and there was a report of a possible Common Hawker *Aeshna juncea* which, unfortunately, would not settle for a photograph. There was a definite sighting of a Migrant Hawker *Aeshna mixta* and of a pair of Common Darters *Sympetrum striolatum*. The closest views obtained on the excursion were of a minimum 5 Large Red Damselflies *Pyrrhosoma nymphula* on the well-vegetated farm ponds.

HYMENOPTERA - Aculeata (Andy Millard)
Most time was spent on the moorland area where Honey Bees *Apis mellifera* and the common bumble bees *Bombus terrestris*, *B.lucorum* agg. and *B.pascuorum* were observed. On a shallow bank of south-facing exposed subsoil at the edge of a track across the moorland the Heather Plasterer Bee *Colletes succinctus* was recorded, together with the Black-horned Nomad Bee *Nomada rufipes,* a cleptoparasite of mining bees. There are 20 records for *C. succinctus* from VC64, most from Pompocali, north east of Leeds, and Brimham Rocks, just over 5 miles from Humberstone Bank Farm as the bee flies. Similarly, in VC64 there are 24 records for *N. rufipes*, also found at Pompocali and Brimham Rocks. The most likely host for this nomad bee, although not found during this excursion, is the Heather Mining Bee *Andrena fuscipes*, recorded at Brimham Rocks but in 1984. The low bank also hosted a colony of the Common Black Ant *Lasius niger* agg.

BIRDS (Ken White)
During the 2 days of the weekend, an impressive total of 40 species were identified by the members. Late songsters included Willow Warbler and Skylark. There were Barn Owls hunting by day over the recently-cropped meadows and they revealed 2 juveniles in the barn next to the farmhouse when they were fed. A newly-fledged family of Stonechat were found and in places there was an abundance of Meadow Pipits and Wheatears, especially in the lower moorland areas. While the moth trappers were setting up at dusk a Merlin flashed past. The heather moors had, as expected, a couple of Red Grouse families. During the excursion day a further 5 diurnal raptors were seen on the farm, with Buzzards challenging Red Kites and a Sparrowhawk remonstrating at a passing Hobby, and a Kestrel managed to hover over the pastures and keep out of the way. The same meadows supported several wandering groups of Curlew, especially in the late afternoons. Just 1 Spotted Flycatcher was seen in the shelterbelt woodlands.

OTHER VERTEBRATES (Ken White)
Despite the dry heat Common Frogs were seen and Common Lizards were reported in the Heather. A very fine 1 metre long Adder crossed a track at the top end of Harden Gill (photo p236). Wild mammals included Brown Hare, Rabbit, Brown Rat, Stoat and Roe Deer. Mole hills were also found.

DISCUSSION & CONSERVATION (Ken White)
Thankfully a fresh breeze all day prevented the temperature from climbing too high. The timing of the excursion was perfect for catching the Ling at its best, and the vistas of pink moorland were delightful. The general consensus from the members was how well-managed the site looked. The novelty of the site made the YNU visit that much more exciting and satisfying to investigate. The returns on the moth trapping effort were very rewarding, the surprising abundance of some butterfly species that had survived the long hot dry summer was very reassuring and the range of bird species present on the farm reflects well on the range and condition of the farmland habitats. However, although the prolonged hot dry summer had clearly dried out a lot of the well-drained soils there was remarkably still some running water in the streams and standing water in some ponds; indeed at the top of the Harden Gill there was still a ford where the access track crossed it.

Therefore perhaps it was not the best time to assess the extent of open water, but it was agreed that there is scope for more to be created by enlarging the existing small ponds as well as the creation of new ones along the small stream water courses. If hotter dryer summers are going to become more regular then this small scale change could make quite a difference in the diversity and abundance of flora and fauna. Areas of damp pasture were definitely attracting visiting Curlews and the fact that *Potamogeton* sp. was growing in damp grass suggested that it would not be difficult to increase moisture availability in some places to create more open water.

Other observations about the farmland included an assessment that the grazing levels seemed to be in good balance with regard to maintaining the pastoral habitat conducive to wildlife, although the Bracken was seen to be rather extensive and could be targeted to reduce and control its current extent of cover. As the farm is part of the vital water catchment area the means by which the Bracken could be managed would have to be carefully considered and determined.

Another comment with regard to water quality and runoff was the presence of large manure heaps. Does all the muck come from overwintering livestock in the farm barns? Are there plans to increase livestock on the farm? If so, will the extra livestock require supplementary feeding brought in from outside the farm? Will there need to be more barn construction on-site to overwinter them and will there be therefore more muck generated on the farm? Are there any plans to ship the muck away

for use in lower valley farms rather than for spreading at Humberstone?

On a more positive note, it was suggested that there could be small scale native tree planting, especially Hawthorn for additional springtime nectar and autumn/winter berry provision. Existing shelterbelt plantings include non-native conifers; as they mature and are removed will they be replanted with native broadleaf trees? Some of the shelterbelts are largely same-age trees lacking cavities for hole-nesting passerines; provision of nest boxes might be of benefit to them.

In conclusion the YNU was very fortunate to be invited and spend such a rewarding and enjoyable weekend at this very agreeable site. It was a privilege to have access over Humberstone Bank Farm on such a delightful high summer weekend. Our many thanks to Yorkshire Water for inviting the YNU to explore this very interesting site and especially to farm manager Jon Grayson for hosting us for our excursion and for the afternoon tea & meeting at the wonderful onsite Hub facility.

Book review

Sorby Record; A Journal of Natural History for the Sheffield Area: The State of Sheffield's Birds 2020.

Edition number 56 of the Sorby Record journal is truly David Gosney's lockdown love letter to Sheffield's birds. Comprising six short papers tracking what can only be described as a devastating decline of the vast majority of species, this collection is clearly well-researched and supplemented with substantial survey work and review across the east of the city.

Four of the papers are based on some considerable fieldwork (over 200 visits), all undertaken by the author and aiming to replicate previous studies for comparison of data. Some tetrads and therefore papers have had more repeat visits in their surveys to give a better balance of validity. The issue is acknowledged, accepting that the snapshot may not always be entirely reflective of the ongoing situation.

In the final paper of the group the author aims to chart the declines of those species that were found to be missing or in considerably fewer numbers during the survey effort. This sadly evidences the likely loss of 16 breeding species since 2008. Gosney's introductory chapter identifies reasons for the changes, focusing on habitat changes (from lack of management) and social impacts (walkers, dogs and horses), but curiously avoiding discussing potential impacts of climate change.

The introduction implies that this is the first section of a double hander, with more papers to come in the next issue, including a summation of the situation within the Sheffield area. It is likely to be an invaluable review and a discussion starter for local birders. It would be interesting to see something similar for other areas.

Even though I'm not a Sheffield local I will be putting in an order for edition 57 to get the complete picture of the city's birds at the turn of the decade.

Becky Bailey

YNU Calendar 2023

Event details at the time of press were not fully available. Please check the Events page of the YNU website at https://www.ynu.org.uk/news-events/events for further information and updates.

Jan	19	Evening Zoom Meeting (7.30pm): A Year in the life of a Swift By Linda Jenkinson.
Feb	15	Executive meeting (via Zoom) 7:30 to 9:30 pm.
	18	South Yorkshire Natural History Day. Treeton Miner's Welfare, Arundel St. Treeton S60 5PW. Talks and displays 10:00-16:00.
	23	Evening Zoom Meeting (7.30pm): A survey of Bush-crickets in Hull by Africa Gomez.
Mar	12	Lepidopters Group Annual Meeting at Bramham Village Hall Time tbc. Contact co-ordinators Robert Woods or Charles Fletcher.
	18	Entomological Section: Recorders Reports and Conversazione. Wilberforce Community Centre 10:30 to 16:30.
May	6	Bryological Section meeting at Frostrow VC65. Meet at 10:00 in the Joss Lane car park, Sedburgh SD65919218. Contact: Tom Blockeel.
	13	Botanical Section VC63: Seckar Wood SSSI. Meet at Seckar Wood car park, off Seckar Lane, Wakefield WF4 2LE. Contact: Louise Hill.
	27	**YNU Excursion VC64: Hell Wath, Ripon SE302705.**
	31	Botanical Section VC65: Marfield Wetlands Reserve nr Masham. Meet 10:30 in car park near entrance at SE213822. Contact Linda Robinson.
Jun	7	Entomological Section: Brockadale YWT reserve. Contact Derek Whiteley for further details.
	24	**YNU Excursion VC65: Swinton Estates - Nutwith Common/Hackfall Woods.**
July	**1**	**YNU Excursion VC61: Hornsea Mere (scheduled week-end event). Meet on Wassand Road, TA 171466.**
	22	**YNU Excursion VC62: 'Forest of Flowers' rewilding site, Home Farm, Huby. SE544654.**
Aug	**13**	**YNU Excursion VC64: Potteric Carr YWT reserve, Doncaster SE587005.**
Sep	17	YNU Executive Committee Meeting. Meet in Horsforth, 10.30-12.30.
Oct	7	Bryological Section VC61: Allerthorpe Common YWT reserve.
	15	**YNU AGM in York.** Details tbc.
Nov	3	Entomological Section AGM at Potteric Carr. Details tbc.

Yorkshire Naturalists' Union

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The Naturalist

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Contributors should indicate whether they wish their manuscripts to be subjected to anonymous peer review. All other manuscripts will be reviewed by the Editorial Board who at their discretion may send them to third parties for comment and advice.

Original articles should be submitted electronically as an MS Word document to Dr A. Millard at:
editor@ynu.org.uk

Please look at a recent issue of the journal for a general idea of how to present your article. Also see *The Naturalist* - *Guidance for authors* at www.ynu.org.uk/naturalist and please **avoid** the following:

- using any paragraph formatting and line spacings other than single.
- using tabs to tabulate information (please use MS Word table format).

Good quality, high resolution images are very welcome and should be sent as .jpg files, with a separate MS Word file containing the caption and name of the person to whom the image should be attributed.

If electronic submission is not possible, contributions should be sent to Dr. A. Millard, Woodland Villas, 86 Bachelor Lane, Horsforth, Leeds LS18 5NF (Tel. 0113 258 2482).

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